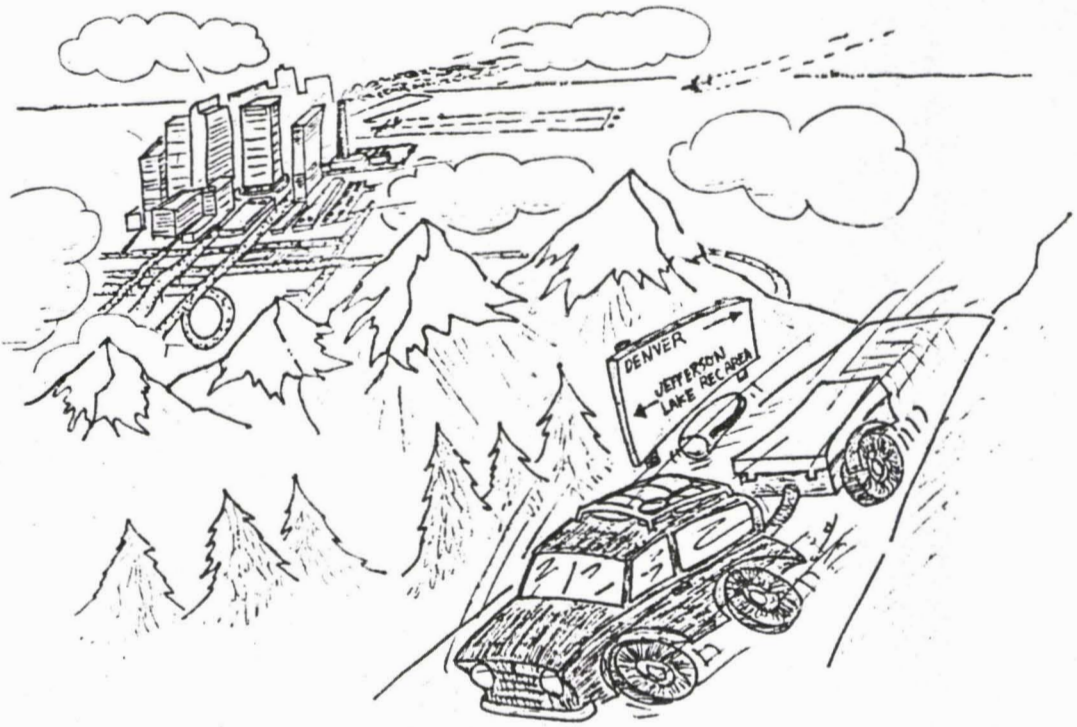
SERVING AN URBAN POPULATION - A PROPOSED MANAGEMENT PLAN FOR THE JEFFERSON LAKE RECREATION AREA

Johnny Hodges
Forester
South Park Ranger District
P.O. Box 219
Fairplay, CO 80440
(719) 836-2031
DG:RO2F12D10A



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Author: Johnny Hodges
Forester
Pike and San Isabel National Forest
South Park Ranger District
Box 219
Fairplay, CO 80440
(719) 836-2031
DG:RO2F12D10A

Title: Serving An Urban Population - A Proposed Management Plan For The Jefferson Lake Recreation Area

Abstract: The Jefferson Lake Recreation Area is located 75 miles southwest of Denver, Colorado, with its metropolitan population of 1.9 million residents. The recreation area encompasses 3,000 acres of the Pike and San Isabel National Forest with 90 acre Jefferson Lake as the focal point. Developed facilities include three campgrounds, three picnic areas and a boat ramp. Most facilities are located along a 3.8 mile stretch of Jefferson Creek below the lake.

Seventy-eight percent of the campers and 90 percent of the day-users are from the Denver metro area with most use concentrated on weekends. Heavy use is impacting both the environment and facilities.

A review is made of existing facilities and current management policies. A proposed plan is developed to guide management of the area for the next 25 years. Major elements of the new plan include determination of maximum carrying capacity of the area; construction of an entrance station and the charging of day-use fees; investing $2 million in new construction and improvements to facilities, roads and trails; differential pricing of campsites; and new interpretive programs.

The new construction will include expansion of the campgrounds from 64 to 150 sites, the addition of flush toilets and showers, the addition of electric and water hook-ups to all sites in two campgrounds, a RV dump station and an outdoor theater for nightly campfire programs.

The economic benefits of the proposed management proposal have a present net value of $16.0 million compared to $10.2 for current management.

Keywords: Developed recreation, management plan, urban population, carrying capacity, economic analysis, recreation area, differential pricing.

EXECUTIVE SUMMARY

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Author: Johnny Hodges
Forester
Pike and San Isabel National Forest
South Park Ranger District
Box 219
Fairplay, CO 80440
(719) 836-2031
DG:R02F12D10A

Summary: The Jefferson Lake Recreation Area is located 75 miles southwest of Denver, Colorado, with its metropolitan population of 1.9 million residents. The recreation area encompasses 3,000 acres of the Pike and San Isabel National Forest. The main attraction of the area is 90 acre Jefferson Lake, located just three miles east of the Continental Divide and surrounded by 12-13,000 foot mountain peaks.

Seventy-eight percent of the campers and 90 percent of the day-users are from the Denver metro area with most use concentrated on weekends. Heavy use is impacting both the environment and facilities.

The purpose of this paper is to review current management policies and to determine what changes are necessary to protect the environment and to provide for the needs of the users for the next 25 years.

The popularity of the Jefferson Lake Recreation Area is due to several exceptional attributes including the lake itself, located in a high altitude, scenic setting; excellent trout fishing in the lake and Jefferson Creek; opportunities for hiking, wildflower and wildlife viewing; and ease of access.

Developed facilities in the area include three campgrounds with a total of 64 sites, three picnic areas and a boat ramp. Most facilities were constructed in the early 1960's. One picnic area is located along the south shore of the lake. All campgrounds and two picnic areas are located along Jefferson Creek which runs 3.8 miles from the lake to the Forest boundary.

All roads in the area are gravel surfaced except for a steep section of Jefferson Creek Road #401 which was chip-sealed in 1988. All gravel roads are usually in a very rough condition due to heavy traffic volumes.

The managed season for the area runs from Memorial Day through Labor Day with campgrounds at 90-100% of capacity on weekends, and about 30% of capacity on weekdays. Two compliance checkers work the area on weekends, but are not present on most weekdays. Fee compliance is fair on weekends and poor on weekdays.

The current carrying capacity of the Jefferson Lake Recreation Area is 855 PAOT. There is currently no limit and no control on the number of cars allowed into the area.

Numerous changes will be made under the proposed management alternative. The primary limiting factor on the carrying capacity is the parking lot at the lake which will accommodate a maximum of 150 cars. This available parking will be evenly divided between campers and day-users. The maximum carrying capacity for the recreation area will be 1750 PAOT.

An entrance station will be constructed to control access and, if necessary, limit the number of vehicles in the recreation area. A use fee of $2 will be collected at the entrance station.

The campgrounds will be expanded from 64 to 150 sites. To better serve the public, flush toilets and showers will be constructed. Two of the campgrounds will contain full electric and water hook-ups for RV's and a dump station to serve RV's will be constructed. One campground will be restricted to tent camping only. All campgrounds will be placed on a national reservation system. Campground fees will be raised to around $12 on weekends, but fees will be reduced to $6 on weekdays when demand is lower.

Six miles of existing roads will be paved and 2 miles of new road will be constructed and paved in the campground expansions for a total cost of approximately $1 million. Several trails will be constructed and reconstructed. These trails will provide access to the lake from all campgrounds, provide a loop trip around the lake and provide a viewpoint overlooking the lake from a high peak above timberline.

A new outdoor amphitheater will be constructed with seating for 200 people. Interpretive programs will be presented nightly and other talks and hikes will be added to meet demand.

Total cost of all improvements, including roads, is $2.1 million.

The estimated use with current management is 66,950 RVD's. Economic analysis shows that over a 25 year period the present net value of current management is $10.2 million.

Under the proposed management alternative, use is estimated to increase to 128,250 RVD's, with a present net value of $16.0 million.

I. INTRODUCTION

A. Statement of Purpose

The purpose of this paper is to develop a management plan for the Jefferson Lake Recreation Area. Located just 75 miles southwest of Denver (see map in Appendix A) and its metropolitan population of 1,861,300 people, this recreation area is extremely popular on weekends throughout the summer. Seventy-eight percent of the campers using the area are from the Denver metro area. This heavy use is causing an impact on both the environment and facilities. Current management policies must be changed to avoid permanent resource damage.

A review will be made of the existing facilities and current management practices. A recreational carrying capacity of the area will be discussed and a limit on the number of users will be proposed. A plan to upgrade facilities will include expansion of existing campgrounds, addition of an entrance station, addition of flush toilets and showers, new interpretive programs, new trails and road improvements. These improvements, along with changes in management policies, will allow the Forest Service to provide a quality recreational experience for its urban users for the next 25 years.

B. Physical Setting

The Jefferson Lake Recreation Area encompasses approximately 3000 acres of the South Park Ranger District on the Pike and San Isabel National Forest (see map in Appendix B). The focal point and principal attraction of the recreation area is 90 acre Jefferson Lake, lying at an elevation of 10,700 feet. The lake lies in a cirque basin 3 miles east of the Continental Divide and surrounded by mountain peaks ranging between 12,000 and 13,000 feet in elevation.

Between Jefferson Lake and Denver, this recreation area exceeds all others in terms of scenic beauty and recreational opportunities. Some of its exceptional attributes include a lake in a high altitude, scenic setting, excellent fishing in the lake and in Jefferson Creek, opportunities for hiking, viewing wildflowers and wildlife, and ease of access.

Gill net surveys conducted by the Colorado Division of Wildlife in 1986 and 1987 showed the lake contained 41% lake trout, 12% rainbow trout, 14% brook trout and the remainder was "rough" fish. The lake is heavily stocked with 30-40,000 catchable rainbow trout throughout the summer. Most of these fish are caught quickly which results in their low percentage of the total population.

The lake trout are the prize catches of Jefferson Lake. Although they make up only 41% of the total population by numbers of fish, they represent 69% of the population by weight. Some very large fish are taken from the lake. The lake is generally frozen from November to late May each year, but receives extremely heavy fishing pressure during the remainder of the year. The city of Aurora, a suburb of Denver, controls the majority of water rights on the lake.

Jefferson Lake is drained by Jefferson Creek, which flows on National Forest land for 3.8 miles below the lake. The creek contains numerous beaver ponds and is also very popular for fishing. The creek is also stocked with rainbow trout throughout the summer. Most of the developed facilities are located in this area.

The area is heavily forested with lodgepole pine, Engelmann spruce, bristlecone pine and aspen. Vegetation is generally sparse under the forest canopy, but beneath the aspen stands, the undergrowth is very lush with tall grasses and abundant wildflowers including the Colorado state flower, the blue columbine. There are open grassy meadows interspersed throughout the forest. Riparian areas along the creeks are often covered with willows.

Timberline at this latitude occurs at about 11,500 feet. What little vegetation exists above timberline is very short and mixed with talus slopes and rock outcroppings. Magnificent fields of wildflowers are present in late June, July and August.

Summer temperatures are pleasant with highs in the 60's and 70's and nighttime lows in the 30's and 40's, although the temperature can dip below freezing any night. Relative humidity is low and sunshine is abundant during the summer. Afternoon thunderstorms can be a daily occurrence in July and August. Snow can occur in any month and vehicular access to the lake is usually blocked by snow beginning in late October until late May or early June.

II. CURRENT SITUATION

A. Existing Facilities

The Jefferson Lake Recreation Area currently contains 3 campgrounds and 3 picnic areas as well as a boat ramp at the lake. Most of the facilities were constructed in the early 1960's. Development around the lake itself is restricted due to steep slopes. Most of the camping and picnic facilities are located along the 3.8 miles of Jefferson Creek below the lake.

At Jefferson Lake itself is a concrete boat ramp constructed in 1987. On the south shore of the lake are 35 picnic sites and 2 major parking lots which will accommodate 150 cars. Two vault toilets are located near the parking areas and 1 toilet is within the picnic area. No drinking water is available. Many of the picnic sites overlook the lake and most are situated within stands of bristlecone pine trees.

About 1.5 miles below the lake is Jefferson Creek Campground with 17 camping sites, drinking water and two vault toilets. This is the most popular campground in the area because it is closest to the lake. Jefferson Creek parallels the campground a few hundred feet away. Most of the parking spurs are short, generally less than 30 feet long. The campground is located in lodgepole pine and Engelmann spruce with almost no understory vegetation. There is little screening between campsites.

One half mile below the campground is the Beaver Ponds Picnic Area with 4

picnic tables and fire grates, 1 vault toilet and no drinking water. There are several beaver ponds nearby which vary in location depending on the activity of the beaver. The fishing for brook and rainbow trout in the ponds and Jefferson Creek itself is fairly good.

Another 0.5 mile below the picnic area is Aspen Campground with 12 sites, 1 toilet and drinking water. The campground is located in a mixture of aspen and spruce with good screening between campsites. There is also a large meadow bordering it on the north and east sides. Jefferson Creek is on the opposite side of the main road several hundred feet away. This is the smallest of the three campgrounds and is not well suited for large vehicles due to short parking pads and dense vegetation.

Down the road 0.25 of a mile is the Lodgepole Campground with 35 sites, 2 vault toilets and 2 hand pumps for drinking water. As the name implies, it is located in a stand of mostly lodgepole pine mixed with some Engelmann spruce. The area is well worn with most of the trees pruned up as high as people can reach and affording little screening between sites. Ten parking pads are 40 feet long, but the remainder are less than 30 feet.

The Jefferson Boundary Picnic Area is located another mile downstream and contains 4 picnic tables and fire grates, 1 vault toilet and no drinking water. This is another popular fishing spot since the creek is a little deeper in this area.

The National Forest boundary is located another 0.5 mile south. At the Forest boundary, road #427 runs north into Guernsey Gulch area. Up this road about 0.25 mile is a designated "overflow" area which is used by campers when the campgrounds are full. On weekends this area holds an average of 25 camping parties. There is generally one portable toilet kept in this area. The campsites are scattered throughout stands of aspen and lodgepole pine. No tables, fire grates or water are provided.

B. Transportation System

There are only 2 major highways from Denver heading west into the mountains (see map in Appendix A). Interstate 70 is mostly a 4 lane controlled access highway as it heads westward across the state. This is the major route from Denver to many popular recreation areas including Keystone, Arapahoe Basin, Copper Mountain and Breckenridge ski areas, Dillon Reservoir, Vail/Beaver Creek, Glenwood Springs and Aspen. I-70 also intersects with Highway 40 which is a major access route into the northwestern part of the state.

Highway 285 is the other highway leading west from Denver. At Fairplay, 85 miles from Denver, it turns south and in another 50 miles intersects with Highway 50. Highway 50 runs due west and Highway 285 continues south. These two roads are the major access routes for the southwestern quarter of Colorado.

Interstate 70 is becoming increasingly crowded. On a typical Sunday afternoon in the summer, traffic heading east becomes stop and go from the intersection of Highway 40 and I-70 which is 42 miles west of Denver! This type of driving

condition is forcing more people onto Highway 285 in search of less crowded areas for recreational opportunities. It, too, is very crowded with almost bumper to bumper traffic in Fairplay on a typical Sunday afternoon in the summer.

Highway 285 is a 4 lane road until it is 15 miles west of Denver, then it becomes a 2 lane highway with an additional passing lane on the steeper grades. The highway climbs from an elevation of 5200 feet in Denver to 10,001 feet at Kenosha Pass 65 miles to the southwest.

The small town of Jefferson is 4 miles further. From here one turns north (right) onto a gravel road, travels 2 miles, then turns north (right) onto road #401 and goes 1.25 miles before reaching the National Forest boundary. The Jefferson Lake Recreation Area begins at this point.

The road between the National Forest boundary and Highway 285 is 3.25 miles of 2 lane, gravel surfaced road maintained by Park County. Forest Service maintenance begins at the Forest boundary and continues for 3.8 miles to Jefferson Lake. The next 2.3 miles up to Jefferson Creek campground is a well worn gravel surface, varying between 1.5 to 2 lanes wide. The surface is usually heavily washboarded and very rough, which restricts vehicles' speeds to 10-20 mph. This portion of the road is maintained (bladed) 3 times during the summer season in June, July and late August.

Starting at the Jefferson Creek Campground, the road begins a steep ascent for 1.5 miles up to Jefferson Lake. In the summer of 1988, this portion of the road was paved with a chip seal surface. The road is mostly 1 lane wide with turnouts. The large parking areas at the lake were not paved and remain a gravel surface.

All campground spurs are mostly native surface with small amounts of gravel. They are rocky and fairly rough most of the year.

Complaints about the condition of the roads are common during the summer. Due to the high traffic volumes, it is impossible to keep the gravel surface smooth without blading it weekly. The paving, which was completed on the last 1.5 miles, improved the situation and led to a reduction in complaints and hopefully, accidents. This portion of the road was the scene of a fatal accident in 1987. However, with a smoother surface vehicle speeds are likely to increase with the possibility of even more accidents.

C. Trails

Jefferson Lake Trail

Trail #642 circles Jefferson Lake, but most of the trail was never actually constructed. Some clearing was done along the west side of the lake, but most of the trail appears to have evolved over time. On the west side of the lake the trail is fairly level and follows along the shore about 50 feet above the water.

On the east side of the lake there are 2 or more trails depending on the water level in the lake. Some portions of these trails cling to very steep terrain. When the lake is low, one trail follows the water's edge depending on how muddy the ground appears.

The total distance around the lake on the trail is about 2 miles. There are no signs at the parking lot or anywhere else designating the trail or giving directions.

Colorado Trail

The Colorado Trail is a continous, non-motorized recreational route running for 469 miles from Denver to Durango in southwestern Colorado. The trail passes through seven National Forests and six wilderness areas, traverses five major river systems and penetrates eight of the state's mountain ranges (9). Although reconstruction will be an on-going process, the trail was completed in 1988 and is rapidly becoming a very popular route within the state.

The trail passes through the Jefferson Lake Recreation Area crossing the road south of the Beaver Ponds Picnic Area (see map in Appendix B). From this point two routes can be walked. One route leads east to Kenosha Pass on Highway 285; the total distance is 5.8 miles. The other route leads northwest for 6.1 miles to a crossing of the Continental Divide on Georgia Pass at an elevation of 11,585 feet. This is the highest pass crossed by the Colorado Trail.

West Jefferson Trail

The West Jefferson Trail (also known as the Jefferson Lake Loop Trail) follows the Colorado Trail from its crossing of the Jefferson Creek road heading toward Georgia Pass. After 5.3 miles the loop trail veers northeast from the Colorado Trail and passes into West Jefferson Creek. It then descends down the drainage, passes through Jefferson Creek campground and then turns south until the starting point is reached. Total distance is about 10 miles.

D. Forest Plan Direction and Recreation Opportunity Spectrum

The Land and Resource Management Plan for the Pike and San Isabel National Forest provides general direction for management of developed recreation sites. The Jefferson Lake Recreation Area is located in management area 2B, which "provides opportunity for outdoor recreation in roaded natural and rural settings, including developed recreational facilities and year-round motorized and nonmotorized recreation."

General direction for recreation site construction and rehabilitation includes the following:

1. "Provide appropriate development facilities where the private sector is not meeting the demand.
2. Maintain cost-effective developed recreation facilities which complement non-Forest Service developments.
3. Provide facilities which are accessible to handicapped persons."

For management of developed recreation sites the plan recommends construction, reconstruction and maintenance of developed sites in accordance with the established Recreation Opportunity Spectrum (ROS) classification for the management area. The ROS for the Jefferson Lake Recreation Area is currently classed as roaded natural. A roaded natural area contains moderate site modification. The facilities are about equally oriented to protection of the site and comfort of the users. Contemporary/rustic design of improvements is usually based on the use of native materials.

Inconspicuous vehicular traffic controls are usually provided. Roads may be hard surfaced and trails formalized. Development density is about 3 family units per acre. Primary access may be over high standard roads. Interpretive services are informal, but generally direct (15).

A ROS class of roaded natural or rural would be managed on a site development scale class 3 or 4. Recreation developments would be managed at scale 3 and 4 sites for full service when at least one of the following are met:

a. A campground is designated as a fee site.
b. More than 20 percent of theoretical capacity is being utilized.
c. The site is a boating site with a constructed ramp.

All 3 of those requirements are met at the Jefferson Lake Recreation Area. The Forest Plan contains no additional specific direction for management of developed recreation sites in a 2B management area (10).

E. The Customer

From where do the users of the Jefferson Lake Recreation Area come? A survey of license plates was made from 2,030 campground fee envelopes from the 1988 season.

Table 1 - ORIGIN OF CAMPERS USING
JEFFERSON CREEK, ASPEN AND LODGEPOLE CAMPGROUNDS
FROM MEMORIAL DAY WEEKEND THROUGH LABOR DAY WEEKEND, 1988

LOCATION	PERCENTAGE OF TOTAL OCCUPANCY
Arapahoe County*	28
Denver County*	17
Adams County*	15
Jefferson County*	18
Other Colorado Counties	15
Out of State	7
	100

* Located in metropolitan Denver area.

The statistics show that 78% of the campers came from the Denver metropolitan counties of Adams, Denver, Arapahoe and Jefferson. Fifteen percent of the users came from other counties in Colorado and 7% were from out of state.

There are no statistics to validate day use at Jefferson Lake. District recreation personnel estimate that 90% of the day use customers are from the Denver metro area.

F. Current Carrying Capacity

The current recreation use capacity was taken from the Recreation Information Management (RIM) directory on the district. The numbers are based on Persons At One Time (PAOT).

Table 2 - CURRENT CARRYING CAPACITY OF JEFFERSON LAKE RECREATION AREA

Site Name	Capacity (PAOT)
Jefferson Lake (on the water)	120
Jefferson Lake (shoreline)	200
Jefferson Lake (picnic area)	175
Aspen Campground	60
Jefferson Creek Campground	85
Lodgepole Campground	175
Beaver Ponds Picnic Area	20
Jefferson Boundary Picnic Area	20
Total	855

The theoretical seasonal capacity for occupancy sites is equal to PAOT times the length of the managed season in calendar days times two. The theoretical seasonal capacity for day-use sites equals PAOT times the season in calendar days.

Statistical sampling indicates the use of well managed sites falls between 20% and 40% of the theoretical capacity. Based on the report "A Tabulation Of Recreation Use Reported For Fiscal Year 1986 On Developed Sites," (form 2300-1A), data from 1986 show the use of picnic areas at 10-15%, use on and around Jefferson Lake at 20%, and use in the campgrounds ranging from 25-50%. These data are based on estimates of visitor days and have a low statistical confidence level. District personnel feel the use is actually much higher.

G. Campground Use and Fee Compliance

Fee envelopes collected from Jefferson Creek, Aspen and Lodgepole campgrounds were used to determine occupancy from Memorial Day weekend through Labor Day weekend. Data were collected from the 1987 and 1988 seasons. A total of 64

campsites were available in the three campgrounds. The number of fee envelopes collected were totaled each day and divided by 64 to determine the percentage of occupancy each day. Averages were then compiled for each day of the week.

Table 3 - PERCENTAGE OF CAMPSITES OCCUPIED BY DAY OF THE WEEK IN JEFFERSON CREEK, ASPEN AND LODGEPOLE CAMPGROUNDS MEMORIAL DAY WEEKEND THROUGH LABOR DAY WEEKEND

YEAR	SUN	MON	TUE	WED	THUR	FRI	SAT
1987	25	16	19	18	26	76	87
1988	23	8	7	7	13	67	84
AVERAGE	24	12	13	13	20	72	86
ADJUSTED AVERAGE	34	24	26	26	40	92	96

To factor in the amount of non-compliance in the payment of campground fees, the average for each day was adjusted. This was based on the schedule of the compliance checkers working the campgrounds and the campground hosts available. The following adjustments were made:

Sunday +10%
Monday thru Thursday +100%
Friday +20%
Saturday +10%

In 1987 one compliance checker was assigned to the Jefferson Lake Recreation Area. She worked compliance in the campgrounds Friday through Sunday and rarely worked after dark. There was a campground host in Lodgepole Campground from late June through Labor Day weekend.

In 1988 two compliance checkers worked the campgrounds, again Friday through Sunday with occasional work after dark. There was a campground host in Jefferson Creek Campground for the month of July and a host in Lodgepole Campground from late June through Labor Day weekend.

It appears that fee compliance is good on Saturday and Sunday when compliance checkers are present in the campgrounds. Compliance is lower on Fridays because of the late arriving campers. Many of them drive from the Denver area after work and do not arrive in the campgrounds until after dark. For safety reasons, district compliance checkers usually head for home when it gets dark, especially when they are working alone. Many people arriving late on a Friday night do not pay for that night, but they will pay the next morning for Saturday.

Fee compliance on Monday through Thursday is very poor. It appears that people are becoming more aware of the lack of compliance checkers on weekdays and

payment of fees is running about half compared to the number of sites occupied. Spot checks of the campgrounds by district recreation personnel confirm this observation. Note the decrease in occupancy on weekdays from 1987 to 1988. The area gets a lot of return customers and they seem to get wiser as time goes on.

Fees in all campgrounds were raised in 1987 from $5 to $6. The fees remained $6 in 1988. Judging by the comments on fee envelopes, there is some resistance to paying $6 for the services provided, but it does not appear to have dampened demand, at least on weekends.

H. Law Enforcement

All compliance checkers are certified as level II law enforcement officers. They can write citations for most offenses, but they are trained to avoid serious situations which might involve personal safety. Compliance checkers working the Jefferson Lake area are usually present Friday through Sunday at various times during the day up until dark. They also work other campgrounds on the northern end of the district so they are not present full time.

Although campground hosts are used primarily as sources of information, they also serve as a law enforcement presence in the campgrounds and help obtain compliance in the payment of camping fees. There has been difficulty in obtaining campground hosts for the area because of a lack of electricity and other amenities. The hosts that have been recruited have been somewhat difficult to retain and there have not been hosts in all three campgrounds for the entire summer season. The hosts usually are present on weekends when crowds are the largest, but they are gone on some weekdays when they have their days off.

The district has an operating agreement with the Park County Sheriff's Office to provided law enforcement assistance throughout the district which covers 450,000 acres. For the Jefferson Lake Recreation Area, the agreement requires at least one patrol up to the lake and through the campgrounds on Friday and Saturday nights. The rest of the week a minimum of 3 other visits is required.

In addition, deputies may be called at any time and the sheriff's office is reimbursed on a mileage basis. Response time is usually a minimum of 30 minutes depending on the location of the deputy responding. The sheriff's office actually patrols the area more frequently than the agreement requires. They also monitor the Forest Service radio frequencies.

Other law enforcement assistance is provided by the Colorado Division of Wildlife officers who enforce fishing regulations. They are sometimes available for assistance in handling problems if requested.

I. Competing Facilities

Along the Highway 285 corridor stretching 75 miles from Denver to the Jefferson Lake Recreation Area there are very few campgrounds available to the public. There are no privately operated campgrounds. Within 8 miles of Highway 285 there are 3 other campgrounds between the town of Jefferson and Denver, all

operated by the Forest Service. Burning Bear Campground with 13 sites and no use fee and Hall Valley Campground with 9 sites and no use fee are both about 4 miles off of Hwy. 285. Kenosha Pass Campground, located just off of Hwy. 285 on top of Kenosha Pass, contains 25 sites and charges $5 per day. None of these campgrounds offer the recreational opportunities or scenic qualities available at the campgrounds near Jefferson Lake.

Two other campgrounds on the South Park Ranger District are within 10 miles of the Jefferson Lake area. Both are further west and would require a slightly longer driving time from Denver. Michigan Creek campground contains 13 sites with a $5 use fee and Selkirk campground contains 15 sites with no fee.

Those campgrounds charging no fee do not have water or trash pick-up, but do provide vault toilets, picnic tables and fire grates. The fee campgrounds, which are full service, have the same facilities but also provide water and trash collection.

III. PROPOSED MANAGEMENT PLAN

A. Demand

Numerous regional and national surveys have been completed since 1960 measuring the camping market. One of the earliest national surveys in 1960 found 3-4 million camping households in the U.S. By 1978, 17.5 million households were considered campers. Camping participation grew at an average rate of 20% in the 1960's, then slowed to less than 8% in the early 1970's and to less than 5% in the late 1970's (4).

The Pike and San Isabel National Forest receives very heavy pressure for outdoor recreation uses. In 1983, recreation use totaled over 3,830,000 visitor days. The Forest has a developed site capacity of about 17,230 PAOT. If it is assumed that demand can be distributed throughout the Forest as a whole, the existing supply is adequate to meet demand through 1990. However, concentrations of use in the most popular areas can be expected to cause problems or conflicts requiring increased management effort to distribute the use or prevent resource damage (10).

Camping has consistently been the activity with the most visitor days of participation from 1965 through 1980 on National Forests (3). But can we predict demand for one specific recreation area? One of the greatest errors in public recreation investment decisions has been an overemphasis on appraising the suitability of the physical resources for recreation development while ignoring considerations of location which affect demand. Anyone who has examined campground developments, for example, can cite examples of physically delightful areas which are rarely used (5).

There are numerous factors influencing a family's decision to go camping, just as there are in selecting a camping area. Two major factors in choosing a camping area are the distance needed to travel to enjoy the experience and the competition from alternative camping possibilities.

For a family in the Denver metro area desiring to camp in the mountains and to get there in the shortest time possible, there are not a lot of choices. I-70 and Highway 285 are the quickest routes into the mountains. If Highway 285 is the chosen route, the camping opportunities are limited for the first 70 miles. The Jefferson Lake Recreation Area looks to be a very desirable location to camp within a reasonable driving distance of Denver.

All 3 campgrounds are 85-100% full each Friday and Saturday night so Denver residents must agree. The major attractions drawing people to the Jefferson Lake area are the lake itself, the fishing opportunities, the hiking opportunities and climate relief. Denver gets very hot during the summer with temperatures frequently in the 90's, but temperatures near Jefferson Lake rarely warm above the mid-70's. With a population approaching 2 million people in the Denver metro area and with a driving time under 2 hours, Jefferson Lake's popularity appears assured.

B. Carrying Capacity

Who comes to Jefferson Lake? Picnickers, campers, sightseers, boaters, sunbathers, hikers, birdwatchers, naturalists, bicyclists, rockhounds, mountaineers, scuba divers, wanderers and idlers. The amount of land and water in the area is limited. The consequences of increasing use are twofold: the recreation resource itself will be abused or destroyed beyond its power to provide recreation experience; and the congestion of human beings will reduce the recreation experience to a nominal or non-existent state (2).

The problem is: what is the capacity of the Jefferson Lake Recreation Area? What is the limit in terms of either the number of persons occupying the area at any one time, or the number of persons who flow through the area during any specified period of time, such that the recreation area retains its identity as a recreation area?

There are few pertinent and practical carrying capacity approaches and standards in existence. Most efforts which attempt to provide meaningful capacity decision-making guidelines are too general, too limited in scope or too esoteric for practical application. Only limited research has been done on the problem of how to determine optimum recreation carrying capacity; how to arrive at that level of use of a recreation resource which provides the desired participant satisfaction (social capacity) while protecting the recreation resource (physical capacity) upon which a satisfying recreation experience is based.

The blending of factors which determine physical capacity with those that determine the social capacity makes it possible to determine optimum capacity guidelines. This "blending" is one of the most critical actions which can be taken to keep the recreation area from becoming overused or destroyed.

Social capacity is complex and difficult to understand. Factors such as weather, recreating with friends or strangers and pleasant or unpleasant events of the day which are not directly related to the recreation experience are some examples of the complexity of social capacity.

Crowding is an important consideration in understanding social capacity. Crowding often causes negative influences on both the participants' experiences and the physical resource when people start to compete for space. Then activities conflict with one another, litter and vandalism increase, noise levels rise and accidents occur.

Physical capacity refers to the level of use that an area can support without causing an unacceptable change in the natural recreation resource. Some primary factors are the amount of space necessary for the proper conduct of the activity, the climate, the hardiness or vulnerability of the vegetation and the erodibility and other characteristics of the soil. Overuse will impact the site beyond its ability to restore itself by natural means (17).

Jefferson Lake is the major attraction of the recreation area. The parking areas at the lake will provide for a maximum of 150 cars. This is the limiting factor on how many people will be able to use the lake. This, in turn, will be the major factor in determining the capacity of the rest of the recreation area.

Using the national standard of 5 people/car, 150 cars at the lake's parking areas would yield 750 PAOT. The current capacity using RIM data is 495 PAOT with 120 on the water, 200 on the shoreline and 175 using the picnic area on the south shore.

The maximum carrying capacity will be determined in the following manner. PAOT cannot be raised for the picnic area without increasing the sites, which is physically impossible, so it will remain at 175 (35 sites X 5 persons/site).

PAOT for the lake (on the water) will be raised from 120 to 200. At 5 persons/boat this would give 40 boats on the lake or about 1 boat/2 acres. Boating on the lake is usually for fishing only. There is no swimming or water skiing due to the cold water and small size of the lake. PAOT for the lake (shoreline) will be raised from 200 to 375. With about 2 miles of shoreline this would space people 28 feet apart around the perimeter of the lake at capacity.

Jefferson Boundary and Beaver Ponds Picnic Areas would remain at 20 PAOT apiece. This would give a total of 40.

Jefferson Creek Road #401 stretches for 3.8 miles from the lake down to the Forest boundary. Numerous fishermen and hikers park along the road at various turnouts and wide spots. It will hold about 40 cars; at 5 people/car it will hold 200 PAOT. This is currently considered dispersed recreation and no specific PAOT number has been determined for this use.

Jefferson Creek, Aspen and Lodgepole Campgrounds currently have a total of 64 campsites. The parking available at the lake will be split 50/50 between campers and day users, resulting in 75 parking places for each. Assuming that 50% of the campers were driving to Jefferson Lake at any one time, then only 32 parking spots would be used with current campground sizes. To use the entire 75 parking places allocated to the campers, the campgrounds will be expanded from 64 sites up to 150 sites. The current PAOT for the three campgrounds is

320 (5 people/site times 64 sites). This will be increased by 430 to a total of 750. Table 3 summarizes the new maximum carrying capacity.

Table 3 - PROPOSED MAXIMUM CARRYING CAPACITY OF JEFFERSON LAKE RECREATION AREA

SITE NAME	CURRENT PAOT	INCREASED PAOT	NEW TOTAL PAOT
Jefferson Lake (picnic)	175	0	175
Jefferson Lake (on water)	120	+80	200
Jefferson Lake (shoreline)	200	+175	375
Jefferson Boundary Picnic Area	20	0	20
Beaver Ponds Picnic Area	20	0	20
Jefferson Creek Road (Dispersed)	0	+210	210
Jefferson Creek, Lodgepole, Aspen Campgrounds	320	+430	750
	855	+895	1750

This total of 1750 PAOT is based on the maximum number of vehicles which the entire area can hold at any one time. Management constraints must be put in place to limit the number of vehicles to 350 in the area. Additional visitors traveling into the area on the trail system will not be limited at this time.

C. What Do The Customers Want?

Numerous national and regional surveys have recorded the wants and desires of the camping public. One such survey was conducted by the Good Sam Club in 1988 (6). The Good Sam Club is an organization of recreational vehicle owners throughout the U.S. More than 10,000 members responded to their survey asking what they would like to see in Forest Service campgrounds. One thousand of the responses were selected at random with all parts of the country represented.

Interested In FS Campgrounds If Provided With:
- Dump Stations - 68%
- Flush toilets and showers - 50%
- Full hookups - 48%

Reasons For Liking FS Campgrounds:
- Scenery - 89%
- Primitive Atmosphere - 65%
- Economy - 56%

Would Like To See FS Campgrounds Offer:
- Dump Stations - 77%
- Nature Programs & Trails - 60%
- Flush Toilets With Showers - 54%
- Full Hookups - 52%

The Good Sam Club is only one segment of the total camping public. Their thoughts may be representative of other RV campers, although most Good Sam Club members are on the upper end of the economic scale.

Tent campers' comments are certain to differ from the percentages given above. People camping in tents will not be too interested in dump stations or electrical hook-ups, but they may be more interested in showers and sinks with hot water. There is a wide variety of campers, and it is impossible to please everyone, no matter what type of facilities are available in a campground.

What do the users of Jefferson Lake Recreation Area want to find in the campgrounds and day use facilities? Due to time constraints in preparation of this paper, it was impossible to survey the current users of the area. A news release detailing some proposals for the Jefferson Lake Area was sent to the local newspaper, as well as both Denver daily newspapers. Readers interested in participating in a survey about the area were asked to write or call the district office. The article was published in the local paper, but never ran in the Denver papers. Response was very low.

A questionnaire has been prepared and will be used during the summer of 1989 to survey users and record their comments. The questionnaire is in Appendix C.

A personal interview type of survey provides the most realistic answers to questions asked, but it is the most expensive type of survey (14). For this survey, a self-administered questionnaire will be used. The advantages of this method are (12):

(a) Large numbers of questionnaires can be distributed easily and cheaply.
(b) Staff do not have to be trained for interviewing.
(c) Respondents can complete the questionnaire at their leisure.
(d) Removes interviewer-bias from questionnaire completion.

Some disadvantages of this method are:

(a) Questions have to be simple and not open to misunderstanding.
(b) No probing is possible.
(c) Response rates can be low.
(d) Response rates vary depending upon motivation of users and non-response bias may be a problem.
(e) Failure to answer questions is more frequent and the quality of those answered may be poor.

Another advantage for this survey is that respondents will be invited to give their name and address so that follow-up contacts can be made if desired. At this time there is no mailing list of people using the area, so contacts are extremely limited.

The questionnaire will be distributed to both campers and day users at selected times throughout the summer of 1989. People using the area on weekdays as well as weekends will be surveyed. Questionnaires may be returned to fee tubes in the campgrounds or completed and mailed at a later date to the district office.

The recreation experience offered by Jefferson Lake should not be determined solely by the current users. Their thoughts and desires should certainly be considered, but to allow them to dictate management of the area may preclude more desirable policies

Why change anything? The camping facilities offered at Jefferson Lake are similar to every other campground on this district, the adjacent ranger district (South Platte) and most of the Pike and San Isabel National Forest. The Forest offers a place to park the car or RV, a picnic table, a fire grate, a vault toilet and, if a fee is charged, drinking water and trash collection.

The National Forest should be offering a variety of camping facilities for the public to pick and choose the type of experience they desire. Jefferson Lake, because of its location close to Denver and current popularity, especially as a weekend destination, is a perfect place to offer first class campgrounds and interpretive programs.

D. Entrance Station

Construction of an entrance station is a necessity to manage the numbers of visitors to the Jefferson Lake Recreation Area. The area is ideally suited for an entrance station since there is only one access route. The station will be constructed on Jefferson Creek Road #401 at the National Forest boundary in section 25, T7S R76W (see map in Appendix D). A large flat area at this point will also allow construction of other support facilities.

The entrance station will be staffed from Memorial Day weekend through Labor Day weekend with daily hours of 6 a.m. until 10 p.m., except on Fridays, when hours will be extended until midnight to allow for late weekend arrivals. Longer hours, including the possibility of 24 hour/day staffing, may be necessary and will be determined after the station has been in operation for a season.

The station will manage the campground reservation system (in cooperation with campground hosts in individual campgrounds) collect day use fees and provide visitor information. The station will be furnished with electricity and a phone line to allow communication with the district office and for emergencies. Construction cost is estmated at $6,000.

In accordance with the PAOT capacity developed earlier, the number of vehicles allowed in the area will be limited to about 350. This number is only a preliminary estimate and may be adjusted as experience dictates.

Gates will be placed at the entrance station and closed when the campgrounds are full or at night when no attendant is on duty. Gates will provide increased security for campers but will permit departure in the event of an emergency. The gates will not be physically locked, but will be closed to deter additional visitors when the entrance station is not staffed.

To provide support for the entrance station and security for the area, a house will be built near the entrance. This facility will provide sleeping quarters for 2-4 employees, electricity, bath and kitchen with a total of 800-1000

square feet of space. The cost is estimated at $54,000.

E. Day Use Fees

The Forest Service may charge use fees at developed recreation sites that qualify under the provisions of the Land and Water Conservation Fund Act of 1965. Most developed campgrounds are allowed to charge fees, but the question of charging day use fees in a recreation area is less clear. The act itself states ..."no admission fees of any kind shall be charged or imposed for entrance into any other federally owned areas which are operated and maintained by a Federal agency and used for outdoor recreation purposes."

The act later states "Each Federal agency developing, administering, providing or furnishing at Federal expense, specialized outdoor recreation sites, facilities, equipment, or services shall...provide for the collection of daily recreation use fees...(11)"

A letter dated 9/9/88 from the acting deputy chief of the Forest Service discusses the charging of fees. He declares them appropriate as stated:

1. The improvements involved offer more facilities and services than the minimum necessary to assure access and minimize hazards.
2. The cost of the improvements required a substantial investment and requires regular maintenance.
3. The improvements provide a personal benefit to the user for a fixed period of time.

Some examples include developed swimming sites and rivers, or long term, developed parking lots where security is provided. This still leaves some room for debate concerning the charging of day use fees at Jefferson Lake.

A bill, currently in draft form, would amend the LWCFA of 1965. This bill states ..."the Secretary of Agriculture shall charge a daily recreation use fee at designated developed recreation sites and a daily entrance fee at designated developed recreation complexes...Developed recreation sites include, but are not limited to, camp and picnic grounds, swimming sites, boat launch sites, and managed parking lots; and visitor centers with specialized services or programs. Developed recreation complexes are areas where services and facilities are necessary to accommodate heavy public use..."

A list of specific recreation areas are then listed in the bill. New recreation complexes may be added by notifying several different committees in the House and Senate.

Charging day use fees at Jefferson Lake may or may not be legal at this time, but the current political climate is very favorable to amending legislation to allow the collection of such fees in the near future. The President's Commission on Americans Outdoors in 1987 recommended that "local, state, and federal recreation and resources management agencies charge visitors fees to supplement regular appropriations, with the objective of recovering a reasonable portion of operations and maintenance costs."

Despite the reluctance of Congress to authorize expanded fee programs, the public appears to be willing to accept such fees if they know the money collected will be spent for the improvement and maintenance of the facilities they are using (8).

Fees for day use at Jefferson Lake would initially be in the range of $2 - $3. Some type of season pass could also be offered.

F. Campgrounds

To increase the current capacity of the three campgrounds from 320 PAOT to 750 PAOT an additional 86 campsites will be constructed for a total of 150 campsites. All new facilities constructed will be accessible for handicapped users.

Thirty-five new campsites, at a cost of $31,200, will be added to the 17 existing sites at Jefferson Creek Campground for a total of 52 sites. Due to physical limitations of the site, no additional units can be added to this campground. A site plan has already been completed for this expansion. New sites will be designed to handle a 40 ft. trailer or RV. Existing parking spurs will be lengthened to at least 40 ft. long, where physically possible. All sites, both existing and new, will be supplied with water hook-ups at a cost of $28,800 and electricity hook-ups for $18,000. Road costs for individual campground expansions were not broken out and are included for all campgrounds in the description of the transportation system.

The campground will also be furnished with 2 new toilet facilities. Each building will contain flush toilets, electrical outlets, lights, heat, septic system and fresh water system. Within each building the men's side will contain 2 toilets, 1 urinal and 2 sinks with hot/cold water. The women's side will contain 3 toilets and 2 sinks. Two new toilet facilities will cost a total of $120,000.

The Lodgepole Campground will receive 28 new campsites added to the current 35 sites for a total of 63. The new campsites will cost $24,000. Future expansion of this campground is possible with flat terrain surrounding it on three sides. The new sites will be designed to handle a 40 ft. trailer or RV. Existing parking spurs will be lengthened to 40 ft. long where possible. All sites, both existing and new, will be supplied with water and electricity hook-ups. The addition of water hook-ups will cost $33,600 and the electricity hook ups $22,800. The campground will also be furnished with 2 new toilet facilities identical to those described for Jefferson Creek Campground for $120,000.

At Aspen Campground 23 new campsites will be added to the 12 existing sites for a total of 35. This campground will be restricted to tent camping only, so water or electricity will not be furnished to individual sites. Construction of these new campsites will cost $18,000. Three community water sources (faucets/pumps) will be distributed throughout the campground and will cost an estimated $36,000. One toilet facility as previously described for the other two campgrounds will be constructed for $60,000. Due to physical limitations, expansion of Aspen Campground will occur across the meadow to the east of the

existing campground.

Restricting Aspen Campground to tent campers only will segregate the RV and trailer campers from the tents. About 24% of the total available campsites will be restricted to tents only. The questionnaire to be distributed this summer includes a question to determine what percentage of current users are tent campers. Tent campers will not be prevented from using either Jefferson Creek or Lodgepole Campgrounds if they desire to do so. The camping fee in Aspen may also be reduced due to a slight reduction of amenities (no power and water to individual sites).

New toilet facilities and water systems will operate during the summer season from Memorial Day through Labor Day weekend depending on weather conditions. The existing vault toilets will be retained and used during periods outside of the summer season when the campgrounds are open, which is usually later into the fall. The vault toilets will not be open when the flush toilets are operating.

If demand is low enough, only one campground will remain open for fall and winter camping. Vault toilets can remain in this campground and removed from the other two campgrounds. Adding a heater to the vault toilets would add to the comfort level and would be easy to do with a power source nearby.

No cost estimates were made for site hardening, but some work may need to be done. This could include paving of some trails, especially within the campgrounds and accessing toilet facilities. Any hardening required will be determined when final site plans are completed.

G. Reservation System

Jefferson Creek, Lodgepole and Aspen Campgrounds are ideal candidates for adding to the national reservation system currently in operation. By calling a toll free number, campers are able to reserve campsites throughout the summer and are guaranteed their site will be available when they get there. A reservation fee, currently $6, is in addition to the camping fee charged. Operation of this reservation system can be handled at the entrance station, which will be furnished with phone lines and a computer terminal. Within each campground, the campground hosts will control the reserved campsites.

The current situation, with no reservation system, forces campers from Denver to rush out of town on Fridays after work and hope to find a campsite when they arrive at the area. Many of them are disappointed and are forced into the overflow area for at least a night, since the campgrounds are usually at capacity on weekends. With a reservation in hand, they would not be rushed and would be assured of getting a campsite when they arrived, no matter how late. If numerous campers begin to arrive after the entrance station is closed, then the entrance may be staffed 24 hours a day, at least on weekends.

Payment of campground fees through a reservation system allow payment with credit cards. In the future, the Forest Service will probably allow payment with credit cards. This would be feasible at an area with an entrance station and would be desirable to avoid having large amounts of cash on-site.

H. Overflow Area

With the expansion of the campgrounds and the use of a reservation system, the "overflow" area along road #427 in the Deadman Gulch area will be closed. Once the campgrounds reach capacity, additional campers will be advised of other campgrounds in the general area, but they will not be allowed to camp within 2 miles of the entrance station.

Closing of this overflow area will be accomplished by writing a special order prohibiting camping within the designated area. The area will then be posted and patrolled. The portable toilet currently in the area will be removed.

I. Differential Pricing

Differential pricing of campsites, in which more desirable campsites carry a higher fee than others, has been implemented in other National Forest campgrounds and produced acceptable increases in revenue (7). The Forest Service Manual also contains provisions for differential pricing. It states "variable fees by camping unit may be established within a site based on capacity and desirability of the individual unit. Fee rates may be raised during heavy demand periods or reduced when there is a reduction in facilities and services (16)."

The campgrounds in the Jefferson Lake Recreation Area are near capacity on Friday and Saturday nights, but are only about 30% occupied the other 5 nights of the week. In order to make better use of the campgrounds, it appears that two pricing schemes are needed.

On the weekends, campground fees should be set in the $8 to $12 range, once all improvements are completed. On the other 5 nights of the week, campground fees should be reduced by half, resulting in fees of $4 to $6. The purpose is to encourage people to use the area during the week when it is relatively uncrowded, and put a premium on the campsites on the weekends when demand is at its peak. Achieving more use on weekdays will help offset fixed overhead costs.

Using price as a method of distributing limited recreation services assures that those willing to pay the fee are allowed in and others are excluded. For individuals who feel that a site is unique and that there are few good substitute sites, a price change will have little effect on their use of that site. They are termed "high valued users" because they are willing to pay a substantial price. This is in contrast to those who feel that there are many other sites that are almost as good as this site, and who would respond to a price increase by going somewhere else, or by switching to another activity altogether (such as watching T.V.). These are "low value users" and will leave in large numbers, leaving more high value users at the site.

Using prices to redistribute use may not be immediately effective. If a campground begins charging a higher fee on weekends than on weekdays, that will probably not significantly affect trips on the first weekend. But as more and more users become aware of the price differential, they may eventually change their plans. Recreationists' plans may be fixed and unchangeable in the short

run, but for some people, they should be reasonably flexible in the long run. If there are few substitutes for the campgrounds, as in the case of Jefferson Lake, prices may have to be raised substantially before having any measurable impact (13).

Pricing is a valuable management tool to help redistribute recreation use over time. Peak load pricing is an excellent way to do this. The exact prices charged will need to be studied to determine the impacts on demand for campsites in the Jefferson Lake area, but over time, supply and demand can be brought into balance.

Using pricing to determine who may use an area can be socially unacceptable when dealing with public lands. The argument can be made that it is unfair to raise fees for popular recreation areas to reduce demand because it is the less affluent people who are penalized. In the case of Jefferson Lake, there are some alternatives. Camping on weekdays will be at a reduced rate within the recreation area. Camping is available at no charge or at a reduced fee at several nearby areas. Even if a day use fee is charged, it will be nominal and should not tax anyone's ability to pay.

J. Showers

Shower facilities will be constructed to serve all three campgrounds. To reduce costs and to increase security, the shower building will be built near the entrance station. In this way, personnel will be nearby around the clock to help reduce vandalism and to make maintenance and operation of the showers easier. This will inconvenience the campers somewhat, since they will have to drive or walk to the shower which could be a distance of up to 2 miles.

It is difficult to determine how many campers will use showers. Many RV units contain showers so those people may not want to use the furnished showers. The addition of showers to the recreation area may cause campers to stay longer, especially during the week when occupancy is low, which should increase the usage.

The hours when the showers are open will be the same as the hours the entrance station is open, generally 6 a.m. to 10 p.m. and later on the weekends. This will allow the person working the entrance station to lock the shower building at the end of their shift, as well as monitor use when the showers are operating.

The shower building will be segregated into men and women sections with 8 showers in each section. Each shower will have an individual stall and dressing area. There will also be 4 sinks in each section with hot/cold water and two toilets on each side. Electrical outlets will be provided. Heat for hot water and for the building will be provided by the cheapest source which may be propane gas, but could be electricity or solar.

The water system serving the shower building will also serve the entrance station living quarters. The septic system will also serve the showers, the living quarters and the RV dump station. A parking area will provide parking for 15 cars. Total construction cost for the shower facilities is estimated at $82,200.

K. Dump Station

There are currently no dump stations to service RV units along the Highway 285 corridor within 50 miles of the Jefferson Lake Recreation Area. The nearest facilities are in Denver to the east and near Buena Vista 50 miles to the southwest.

A dump station will be built near the entrance station to handle recreational vehicles wanting to empty their tanks. It will be capable of handling traffic from 115 campsites in Jefferson Creek and Lodgepole campgrounds as well as some day use traffic. Total cost is estimated at $42,000.

An alternative idea would be to construct a commercial dump station in Jefferson, possibly on some type of cost-share basis. No one has built such a facility or even discussed such a project, probably due to the initial cost and short summer season. If an operator could be found it would be more desirable than having the Forest Service build and operate a system.

L. Transportation System

Continued upgrading of Highway 285 is expected over the next 25 years. Ultimately it will probably become a 4 lane highway, but how long that will take to accomplish is impossible to determine. Massive increases in funding for highways have again been proposed in the 1989 Colorado Legislature. The governor is very supportive of the funding increases, but whether any increases are approved is anyone's guess. The same debate has been heard for the last several years. Even if large funding increases were approved, Highway 285 is well down the priority list and might receive few additional dollars.

Under current funding Highway 285 will slowly be improved with the addition of more passing lanes, some widening in places and resurfacing of worn pavement. The traffic is certain to continue to increase as the Denver metro area continues to grow and as I-70 becomes more crowded.

One major impact to the recreation traffic on Highway 285 is the completion of C-470 in the southwest portion of the Denver area. See the map in Appendix E. C-470 is a 4 lane highway linking I-25 with I-70 and which will also cross Highway 285. The segment tying I-70 with Highway 285 was opened in November, 1988. There are a few miles left to complete between I-25 and Highway 285. This link will be completed in 1989.

Completion of C-470 will have a major impact on Highway 285. This new access will make it much easier for the southern suburbs of Denver to reach the mountains quickly and Highway 285 will be the closest route. The route between I-70 and Highway 285 may also cause more people using I-70 to drop down to 285 as the interstate becomes more congested.

Jefferson Creek Road #401 is 3.8 miles from the Forest boundary to Jefferson Lake. Currently the last 1.5 miles below the lake is paved with a chip seal surface and the remainder is a rough gravel surface. All campground spurs are mostly native surfaces with some gravel.

Rough roads in the area generate some of the loudest complaining by users. It appears that paving the roads will lead to lower maintenance costs and greater customer satisfaction. It could also lead to higher speeds and greater safety problems than now exist.

Road #401 needs to be widened in places to provide 2 full lanes to accommodate the increased traffic. To provide a 22 foot, paved road for the first 2.3 miles of #401 and to widen and pave the 1.5 miles of chip seal surface will cost $548,400. In areas where the road is currently wider than 22 feet, these turnouts and wide spots will be left graveled but unpaved to provide dispersed parking areas for Jefferson Creek fishermen.

The existing campground loops contain 2.2 miles of roads with a 12 foot width. Campground expansions will create 2 miles of additional roads with a 22 foot travel way. The total cost to pave the existing roads and parking spurs, and to construct and pave the new construction will cost $448,800.

Currently the parking lots at Jefferson Lake are native surfaced. Paving of the parking lots will cost $18,000. After paving the lots and striping parking areas, it should be easier to park 150 vehicles.

M. Interpretive Programs

In the survey mentioned earlier, conducted by the Good Sam Club, 60% of the respondents said they would like to see Forest Service campgrounds offer nature programs and trails. The urban population using the Jefferson Lake Recreation Area would likely match or exceed that percentage.

An outdoor amphitheater will be constructed with seating for 200 people. It will be located north of Aspen Campground and south of the Colorado Trail. This will give it a fairly central location to serve all three campgrounds. Seating will be provided on fixed benches. Electricity will allow the showing of slide shows or movies and a stage for giving talks and demonstrations will be provided.

An adjacent parking area for at least 30 cars will also be constructed. This parking area may be enlarged and also furnish parking for hikers on the Colorado Trail since it is nearby. Total construction cost is $52,800.

Nightly talks will be provided on weekends by Forest Service personnel. Subjects could include wildflower identification, trails, forest management and fishing. If campground use increases on weekdays, talks could be expanded to a nightly basis. Other speakers could be recruited from outdoor oriented organizations in the Denver area such as the Audubon Society or Colorado Mountain Club.

Fishing clinics could be provided by Trout Unlimited or officers from the Colorado Division of Wildlife. Hikes around Jefferson Lake or up to fields of alpine flowers above timberline could be conducted. The possibilities are almost unlimited. The benefits for both the public and the Forest Service would be tremendous.

N. Trails

In order to facilitate movement within the recreation area without using vehicles, the present trail system will be expanded. The Colorado Trail currently provides east/west access and the West Jefferson Trail provides some north/south access. Expanding the current trail system will give people a variety of opportunities for loop trips, easier fishing access along the lake and the creek, trips through the forest and trips above timberline.

To tie some of these trails together and provide trail access to Jefferson Lake from all of the campgrounds, a new trail will be constructed. This trail will also provide walking access to the showers from the campgrounds. The trail will begin at the entrance station and generally parallel Jefferson Creek all the way to the lake (see map in Appendix F). Portions of this trail currently exist as the West Jefferson Trail #648. Relocation will be necessary around Jefferson Creek campground and around some wet areas.

In some areas along the creek there are numerous trails used by fishermen. Some of these routes can be used for the main trail but must be well marked to avoid confusion. Spur trails to the campgrounds, picnic areas and amphitheater will be constructed and well marked. The total length of construction/reconstruction is about 4 miles and will cost $48,000.

A trail (#642) will be constructed/reconstructed around Jefferson Lake, following the current route on the west side. The location on the east side will need to be determined and constructed above the high water level of the lake. A bridge or some type of permanent crossing will be built across the inlet at the north end of the lake. The trail will be about 2 miles long and cost $36,000. This would be an excellent project for a volunteer group such as the Colorado Mountain Club.

This trail could also be paved along the south shore of Jefferson Lake and provide fishing access sites for handicapped fishermen. No cost estimate was made for this proposal.

Another new trail will be constructed from the southwest corner of Jefferson Lake up to an unnamed peak northwest of the lake at an elevation of 12,245 feet. This trail will intersect with the loop trail around the lake (#642) about 0.25 mile west of the spillway and generally follow and climb a ridge just west of the lake. The unnamed peak at the end of the trail furnishes outstanding views of the lake and Jefferson Creek drainage, as well as much of South Park. The trail will end above timberline and provide access to excellent areas for viewing wildflowers. Access to Glacier Ridge along the Continental Divide is available with a 1.5 mile cross-country hike. Construction of this 2 mile trail will cost $48,000.

Both this trail and the Colorado Trail have the potential to connect with the Continental Divide Scenic Trail, should that proposal ever become a reality. Any trail along the continental divide would have to pass nearby.

Two trailheads need to be constructed to control parking and trail access points. One trailhead will be built near the Colorado Trail crossing of

Jefferson Creek Road #401 south of the Beaver Ponds Picnic Area. This trailhead will be built at the parking area for the outdoor theater. With the numerous toilet and water facilities nearby, the trailhead will consist of only a parking area and trail information. The parking area will hold 30 cars and will be shared between hikers and campers attending nightly campfire talks.

The second trailhead will be located at the parking areas on the south shore of Jefferson Lake. It will consist of signing and trail information. Toilet facilities are already present nearby.

O. Other Costs

The Jefferson Lake Recreation Area does not currently have power or phone service nearby. The closest power and phone services appear to be in T7S R7W section 35, NE1/4 NW1/4. Power lines will need to extend from the entrance station up to Jefferson Creek Campground. All lines will be underground. The estimated cost of furnishing power to this point is $81,600.

Phone lines will not be extended beyond the entrance station. In addition to phone lines at the entrance station itself, 3 public pay phones will also be provided near the shower building. The estimated cost is $54,000.

P. Recreation Opportunity Spectrum

As discussed earlier, the recreation opportunity spectrum for most of the Jefferson Lake Recreation Area is currently classified as roaded natural. With the many changes proposed for the area, the ROS will also change for portions of the area.

The only changes being made at Jefferson Lake itself are the paving of the parking lots and some additional trail construction and reconstruction. It does not appear that the ROS will change for that portion of the area above Jefferson Creek Campground up to Jefferson Lake. The ROS will remain roaded natural.

From Jefferson Creek Campground down to the entrance station, the area will be heavily modified and the ROS class will generally be rural. In a rural class the site contains some facilities designed strictly for the comfort and convenience of the users. There is extensive use of artificial surfacing of roads with primary access over paved roads. Vehicular traffic control is usually obvious. Development density is 3-5 family units per acre. Plant materials are native. Interpretive services are often formal or structured.

Some descriptors of an urban ROS class could apply to the area. These include flush toilets, showers and electrical hookups. An urban ROS is the most highly developed level of site modification and can contain surfaced trails, mowed lawns and clipped shrubs. The campgrounds along Jefferson Creek will not be that highly developed; thus, the ROS classes of rural and roaded natural seem the most applicable.

Q. Firewood

The supply of accessible firewood near picnic grounds and campgrounds is very limited. Within the campgrounds most trees have been stripped of all dead limbs and there is no available dead wood on the ground. This has led to the cutting of green trees in and near campgrounds. The general store in the town of Jefferson does not sell firewood in small bundles to the public.

To solve this problem, a contract with a private concession will be developed to offer firewood for sale within the campgrounds on a daily basis. This type of contract is offered on several surrounding ranger districts and is quite successful. The contractor sells dry firewood, usually in bundles of about 1 cubic foot, for $3.00 per bundle. The contractor will drive through the campgrounds in the evenings offering the wood for sale during a designated time period. During the day campground hosts can alert campers that wood will be for sale in the evenings.

This should help eliminate the vandalism associated with trying to gather firewood and it should make the campers happy since they will have a ready supply of firewood at a reasonable cost. Most all campers have a nightly campfire.

R. Security and Law Enforcement

There are numerous studies and recommendations on how to increase security and reduce vandalism. Some ideas from one study recommend the following (1).

1. Use entrance stations to control access.
2. Provide gates to control entry when a campground is full or after 10 p.m. but which permit departure in the event of an emergency.
3. Charge an entrance fee.
4. Use a reservation system to identify individuals or groups using campsites to increase control and make users accountable for their actions.
5. Use campground hosts.
6. Provide firewood at the campground.
7. Provide evening campfire programs.
8. Increase the visibility of rangers or police.

All of these recommendations will be used in managing the Jefferson Lake Recreation Area. One of the most important of these is the use of an entrance station. This will give the people inside the recreation area a feeling of security. The entrance station will be staffed at least 16 hours per day. Personnel will be living in the house near the entrance station so there will be a minimum of 2 people near the entrance at all times.

The improvements in the campground facilities should make it much easier to retain campground hosts in each campground throughout the season. Although they are basically sources of information, experienced hosts can help enforce rules within the campground.

Forest Service personnel will be much more visible within the area while patrolling, performing maintenance and giving interpretive programs. This increased presence is very important, since there will be a much larger investment in facilities subject to vandalism than there is now.

Patrols by the sheriff's office can be increased if it appears necessary. This can be done by making changes in the law enforcement agreement between the sheriff's office and the ranger district.

S. Staffing

The upgrading of facilities and change in management will require increased staffing for the recreation area. The entrance station will be open and staffed 16-18 hours per day so 2 people per day will be required to run it. They will collect day use fees, handle campground reservations and provide information.

One person will be required daily to clean and maintain toilet and shower facilities and to maintain water and septic systems. On weekends (Friday - Sunday) 2 compliance checkers will be needed for patrolling. One of these two people should be able to assist with campfire programs in the evenings. On weekdays, only 1 compliance checker will be needed, unless campground occupancy begins to regularly exceed 50% of available sites.

Campground cleanup is currently handled by a contractor and that practice will be continued. This cleanup includes removal of garbage, cleaning ashes from fire grates, picking up litter and maintaining toilet facilities. Cleaning of the new flush toilets and showers could be added to the contract, but it is not recommended at this time.

A total staff of 5 people should be able to manage the recreation area and also cover everyone's day off during the summer season. In addition, 3 campground hosts would also be needed for the summer. A host could also be used at Jefferson Lake itself to furnish visitor information and supervise parking on the weekends.

T. Competing Facilities

As discussed earlier, there are few other facilities competing with the Jefferson Lake area. One Forest Service proposal currently under discussion is centered around the AG Ranch property near Shawnee about 20 miles east of Jefferson. This area is along the North Fork of the South Platte River within a mile of Highway 285.

The site is capable of handling a 50 unit family campground, a 50 unit RV campground, a group campground for 300 people as well as picnic and other day use facilities along the river. This proposal was recently presented to the public through the local newspaper and through open house meetings. It drew very vocal opposition from nearby residents. The AG Ranch property is surrounded by private property and many local residents did not want any overnight facilities near their homes.

Due to the opposition, it now appears the proposal will be scaled back and provide some day use facilities along the river. A new trailhead will be constructed on top of Kenosha Pass across the highway from Kenosha Pass Campground. This trailhead will be a major access point for the Colorado Trail since this is the first point west of Denver where it crosses a major highway.

U. Economics

The following is a summary of the cost estimates for new facilities in the Jefferson Creek Recreation Area. All cost estimates are from the engineering staff on the Pike and San Isabel National Forest.

1. Extend power lines to the area - $81,600.
2. Extend phone lines to the entrance station - $54,000.

Jefferson Creek Campground

3. Add 35 new campsites - $31,200.
4. Add electrical hook-ups to all campsites - $18,000.
5. Add water to all campsites - $28,800.
6. Add 2 new toilet facilities - $120,000.

Lodgepole Campground

6. Add 28 new campsites - $24,000.
8. Add electrical hook-ups to all campsites - $22,800.
9. Add water to all campsites - $33,600.
10. Add 2 new toilet facilities - $120,000.

Aspen Campground

11. Add 23 new campsites - $18,000.
12. Add 3 community water sources - $36,000.
13. Add 1 new toilet facility - $60,000.
14. Construct 16 unit shower facility - $82,200.
15. Construct dump station - $42,000.
16. Construct outdoor amphitheater - $52,800.
17. Construct entrance station - $6,000.
18. Construct employees housing near entrance station - $54,000.
19. Pave 2.3 miles and re-pave and widen 1.5 miles of Jefferson Creek Road #401 - $584,400.
20. Pave 2.2 miles of road in existing campground loops and picnic parking areas and construct and pave 2.0 miles of roads in campground expansions - $448,800.
21. Construct a 2 mile loop trail around Jefferson Lake - $36,000.
22. Construct a new 2 mile trail from Jefferson Lake to an unnamed peak northwest of the lake - $72,000.
23. Construct a 4 mile trail from the entrance station to Jefferson Lake with spurs to all campgrounds, amphitheater and picnic areas - $72,000.

These cost estimates total $2,056,200.

An economic analysis was performed using the DGECON program to compare current management (alternative 1) with the proposed management plan (alternative 2) for the next 25 years. With current management, no improvements were made other than to gravel all existing roads at an initial cost of $111,200. Gravel replacement costs for succeeding years and additional wear on vehicles (compared to a paved surface) were computed. Other yearly costs were for administration at $22,000 and maintenance at $25,000.

Updated RPA figures were used to determine economic benefit values. Since visitors to the Jefferson Lake Recreation Area engage in a variety of activities, 2 typical visitors were profiled. A camper was expected to spend 50% of his time camping, 25% fishing and 25% either hiking or picnicking. The economic benefits (in RVD's) are $7 for camping, $12 for fishing and $10 for hiking or picnicking. The composite camper would be valued at $9/RVD.

The second type of visitor is a day user. He spends 75% of his time fishing and 25% either hiking or picnicking. This visitor is valued at $11.50/RVD.

To determine the RVD's of current use, estimates were made of the number of cars using the area. The recreation season was broken down into 3 use periods: (1) weekends (Fri. and Sat.) and holidays from Memorial Day through Labor Day (2) weekday use for the same time period and (3) off-season use in September and October. Using 1989 as a basis, there are 33 days of weekend/holiday use, 68 days of weekday use and 60 days of off-season use. No use was estimated for November through May.

For each use period, the number of cars using the area was segregated between campers and day users. To compute RVD's, the number of people/vehicle was estimated at 4 for campers and 3.5 for day users.

In the first use period (weekends) there were 65 cars/day of campers and 160 cars/day of day users. It was estimated that the average camper spends 18 hours in the area for a total of 1.5 RVD's. Day use was computed at 1 RVD/person. To determine total RVD's, the total number of cars/day was multiplied times the number of people/car times the number of days in the use period times the number of RVD's/person.

For weekend use the total was 31,350 RVD's. With 25 cars/day of campers and 50 cars/day of day users, weekday use totaled 22,100 RVD's. Off-season use was 20 cars/day of campers and 30 cars day of day users for a total of 13,500 RVD's.

A camping fee of $6 was charged from Memorial Day weekend through Labor Day weekend. The fee was the same for all days of the week. No fee was charged for camping after Labor Day. No entrance fee was charged. The camping fee was prorated for each RVD. Each car contained 4 people, each worth 1.5 RVD's for a total of 6 RVD's. The $6 camping fee divided by 6 RVD's equals $1.00/RVD in revenue.

The present value of benefits for this management alternative totaled $11.5 million and the present value of costs totaled $1.3 million. The benefit/cost ratio is 9 with a present net value of $10.2 million.

The same analysis was conducted for the proposed management plan, alternative 2. Under this alternative all roads were initially paved and followed up with fog seals at 5 year intervals (beginning the second year), a new chip seal at 10 years and new paving at 20 years. As a result of campground expansion, 2.2 miles of new road were constructed. Administration costs were raised to $75,000 and maintenance costs were also raised to $75,000. Other new facilities (excluding the roads) cost $1,059,000.

Projected use under the new management proposal with 150 campsites available totals 128,250 RVD's compared to a total of 66,950 RVD's under current conditions. This total includes 150 cars/day of campers and 200 cars/day of day users on weekends. Weekday estimates are 75 cars/day of campers and 75 cars/day of day users. During the off-season 40 cars/day of campers and 60 cars/day of day use are estimated.

In addition, under alternative 2 the camping fee is raised from $6 to $12 on weekends. On weekdays, Sunday through Thursday, the fee is reduced to $6. No fee is charged after Labor Day. A day use fee of $2 per car is also projected. This fee will be collected from Memorial Day weekend through Labor Day weekend.

The present value of benefits is $21.4 million and the present value of costs is $5.4 million. The benefit/cost ratio is 4 with a present net value of $16.0 million.

Under alternative 1, current management, 91% of the costs are recovered with a revenue deficit of $110,000. Alternative 2, the proposed management plan, would recover 55% of costs with a revenue deficit of $2,362,000. These cash flow deficits are over the 25 year period discounted to the present time.

Comparing the proposed management plan, alternative 2, to current management, alternative 1, shows an incremental increase in present net value of $5.7 million. This means that by adopting the proposed management plan, economic benefits will increase by $5.7 million when compared to current management practices. For more details of this economic analysis, refer to the DGECON printouts in Appendix G.

V. Implementing The Plan

The proposed management plan will be implemented on the following schedule.

	ITEM	DATE
1.	Contract firewood sales for the campgrounds.	5/89
2.	Distribute survey and complete public scoping for proposed management plan.	6/89-9/89
3.	Prepare site plan.	6/89-9/89
4.	Consult with Park County Commissioners concerning project.	8/89
5.	Prepare environmental assessment.	10/89
6.	Present proposal to Forest capital investment project team.	11/89
7.	Obtain approval and funding from Regional Office.	3/90
8.	Conduct pre-engineering work on project.	1991

9.	Begin construction.	1992
10.	Begin operation of entrance station and campground reservation system.	1993
11.	Complete construction by end of summer.	1993
12.	Begin interpretive programs and operation of all new facilities.	1994

W. Summary

The proposed management plan for the Jefferson Lake Recreation Area is an ambitious idea. The investment of $2,000,000 in new facilities, trails and roads can never be amortized, at least on a cash flow basis But this investment of $2 million generates an increase of $5.7 million in economic benefits compared to current management.

The mission of the Forest Service is to serve the people and to care for the land. Current management policies are doing neither very well, but are just coping from year to year with the existing problems. This management proposal does serve the people and will care for the land.

The recreation strategy initiative currently being emphasized within the Forest Service encourages such large scale projects as this proposal. This "window of opportunity" does not occur too often with the budget constraints of the past few years. Funding for recreation projects is now available and this is the perfect time to take advantage of the opportunity.

One danger of such a large investment in new facilities is that funding will not be available for proper maintenance once the construction is completed. This is certainly a valid worry, but if no new construction was proposed because of this concern, no new facilities would ever be built. The Forest Service has encouraged "risk taking" in the last couple of years. This management proposal is well worth the risk.

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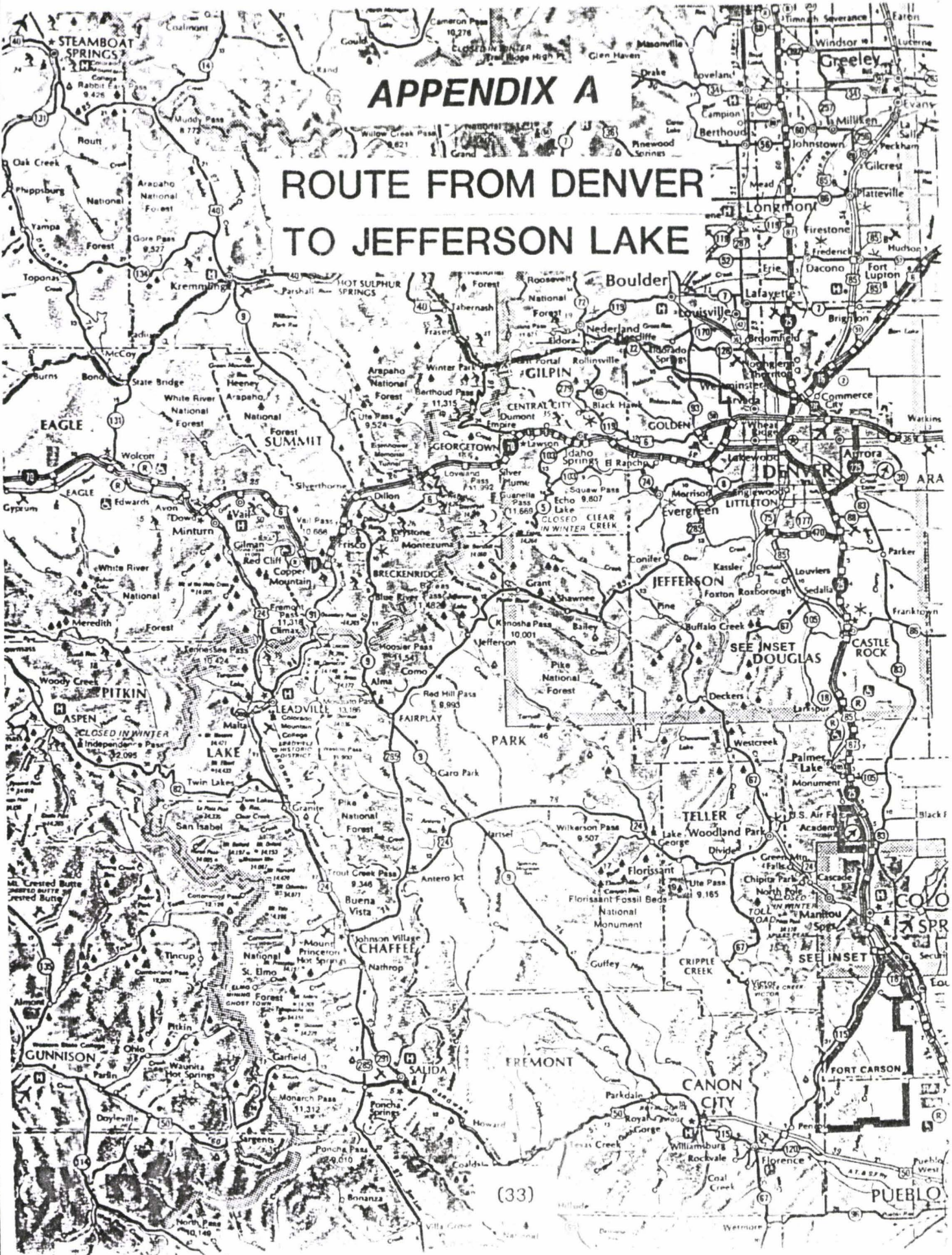
APPENDIX A

ROUTE FROM DENVER TO JEFFERSON LAKE


STEAMBOAT SPRINGS
Cameron Pass 10,276
CLOSED IN WINTER
Timnath
Severance
Eaton
Windsor
Greeley
Loveland
Masonville
Glen Haven
Drake
Campion
Berthoud
Johnstown
Milliken
La Salle
Peckham
Gilcrest
Platteville
Longmont
Mead
Firestone
Frederick
Hudson
Erie
Dacono
Fort Lupton
Lafayette
Louisville
Brighton
Broomfield
Northglenn
Thornton
Westminster
Arvada
Commerce City
Watkins
Aurora
DENVER
ARA
LITTLETON
Englewood
Morrison
Evergreen
Conifer
Kassler
Louviers
Sedalia
Parker
Franktown
JEFFERSON
Foxton
Roxborough
Pine
Buffalo Creek
SEE INSET DOUGLAS
CASTLE ROCK
Deckers
Larkspur
Westcreek
Palmer Lake
Monument
TELLER
Woodland Park
Lake George
Divide
Florissant
Florissant Fossil Beds National Monument
Ute Pass 9,165
Chipita Park
North Pole
Cascade
Manitou Spgs
COLO SPR
SEE INSET
CRIPPLE CREEK
Victor
Guffey
FREMONT
CANON CITY
Parkdale
Royal Gorge
Texas Creek
Williamsburg
Rockvale
Florence
Coal Creek
FORT CARSON
PUEBLO
Wetmore
Hillside
Villa Grove
Howard
Poncha Springs
Poncha Pass 9,010
Monarch Pass 11,312
Sargents
Doyleville
SALIDA
Garfield
Waunita Hot Springs
Parlin
Ohio
Pitkin
GUNNISON
Almont
Tincup
Mount Princeton Hot Springs
St. Elmo
Johnson Village
CHAFFEE
Nathrop
Buena Vista
Trout Creek Pass 9,346
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Granite
San Isabel
Twin Lakes
Malta
LAKE
Independence Pass 12,095
ASPEN
CLOSED IN WINTER
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Woody Creek
Crested Butte
Meredith
Tennessee Pass 10,424
Fremont Pass 11,318
Climax
LEADVILLE
Alma
Como
Moosier Pass 11,541
Red Hill Pass 8,993
FAIRPLAY
PARK
Garo Park
Kenosha Pass 10,001
Jefferson
Bailey
Pike National Forest
Wilkerson Pass 9,507
Tarryall
Grant
Shawnee
Blue River Pass 9,603
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Silver Plume
Guanella Pass 11,669
Echo Lake 9,807
CLOSED IN WINTER
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GEORGETOWN
Idaho Springs
Rapchy
Lawson
Dumont
Empire
CENTRAL CITY
Black Hawk
GOLDEN
Lakewood
Wheat Ridge
Berthoud Pass 11,315
Winter Park
Fraser
Tabernash
Granby
Ute Pass 9,524
Arapaho National Forest
Roosevelt National Forest
Boulder
Nederland
Eldora
Rollinsville
GILPIN
Denver Mountain Parks
Eisenhower Memorial Tunnel
Vail Pass 10,666
Vail
Minturn
Dowd
Gilman
Red Cliff
Copper Mountain
Avon
Edwards
EAGLE
Gypsum
Wolcott
EAGLE
SUMMIT
Heeney
White River National Forest
Arapaho National Forest
McCoy
Burns
Bond
State Bridge
Radium
Kremmling
HOT SULPHUR SPRINGS
Parshall
Toponas
Yampa
Forest
Gore Pass 9,527
Phippsburg
Oak Creek
Routt
Arapaho National Forest
Muddy Pass 8,772
Rabbit Ears Pass 9,426
Clarkville
Steamboat Springs
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Willow Creek Pass 8,621
Memorial Pass 8,760
Grand Lake
Pinewood Springs
Corner Lake
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Divide
Woodland Park
TELLER
Green Mtn. Falls
Palmer Lake
Monument
U.S. Air Force Academy
Black Forest
Deckers
Larkspur
Westcreek
SEE INSET DOUGLAS
CASTLE ROCK
Franktown
Parker
Louviers
Sedalia
Kassler
Conifer
Evergreen
Morrison
Englewood
LITTLETON
Aurora
DENVER
ARA
Watkins
Commerce City
Brighton
Broomfield
Northglenn
Thornton
Westminster
Arvada
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Pinewood Springs
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Timnath
Severance
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Windsor
Greeley
Campion
Berthoud
Johnstown
Milliken
La Salle
Peckham
Gilcrest
Platteville
Longmont
Mead
Firestone
Frederick
Hudson
Erie
Dacono
Fort Lupton
Lafayette
Louisville
Brighton
Broomfield
Northglenn
Thornton
Westminster
Arvada
Commerce City
Watkins
Aurora
DENVER
ARA
LITTLETON
Englewood
Morrison
Evergreen
Conifer
Kassler
Louviers
Sedalia
Parker
Franktown
JEFFERSON
Foxton
Roxborough
Pine
Buffalo Creek
SEE INSET DOUGLAS
CASTLE ROCK
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Florissant Fossil Beds National Monument
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COLO SPR
SEE INSET
CRIPPLE CREEK
Victor
Guffey
FREMONT
CANON CITY
Parkdale
Royal Gorge
Texas Creek
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Rockvale
Florence
Coal Creek
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PUEBLO
Wetmore
Hillside
Villa Grove
Coaldale
Howard
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Parlin
Ohio
Pitkin
GUNNISON
Almont
Tincup
Mount Princeton Hot Springs
St. Elmo
Johnson Village
CHAFFEE
Nathrop
Buena Vista
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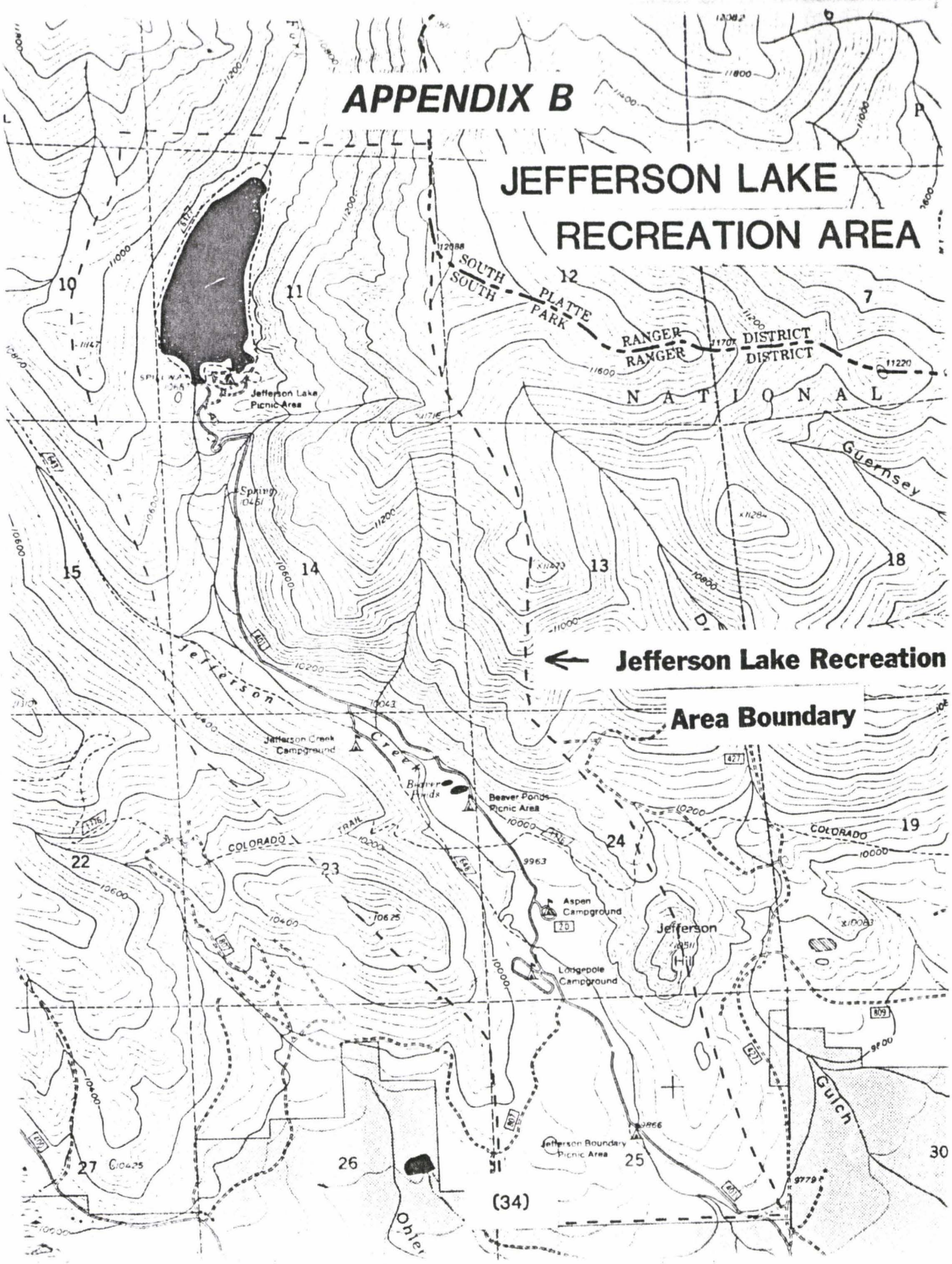
Granby
Ute Pass 9,524
Arapaho National Forest
Roosevelt National Forest
Boulder
Nederland
Eldora
Rollinsville
GILPIN
Denver Mountain Parks
Eisenhower Memorial Tunnel
Vail Pass 10,666
Vail
Minturn
Dowd
Gilman
Red Cliff
Copper Mountain


APPENDIX B
JEFFERSON LAKE
RECREATION AREA
SOUTH PLATTE RANGER DISTRICT
SOUTH PARK RANGER
NATIONAL
Jefferson Lake Picnic Area
Spring
Guernsey
Jefferson Creek Campground
Beaver Ponds
Beaver Ponds Picnic Area
COLORADO TRAIL
Aspen Campground
Lodgepole Campground
Jefferson Hill
Gulch
Jefferson Boundary Picnic Area
Ohlers
← Jefferson Lake Recreation Area Boundary
(34)

APPENDIX C

A SURVEY OF USERS OF THE JEFFERSON LAKE RECREATION AREA

As a user of the Jefferson Lake Recreation Area, we would like your opinion on some possible changes in the management of the area. Please fill out this form and drop it in the fee tubes where you pay your camping fee, or fold the form and mail to the address on the back. Thanks for your help.

1. *How many days per year do you visit the Jefferson Lake area?*

___ *1-5* ___ *5-10* ___ *15 or more*

2. *Which days of the week are you visiting on this trip?*

___*Mon* ___*Tue* ___*Wed* ___*Thur* ___*Fri* ___*Sat* ___*Sun*

3. *What activities are you participating in on this visit?*

___ *Camping* ___ *Fishing* ___ *Hiking* ___ *Picnicking*
___ *Other (please list)* _____

4. *If you are from Colorado, what county do you live in?*

_____ *County.*

If you are from out of state, what state do you live in?

_____ *State.*

6. *If you are camping, what type of camping equipment are you using?*

___ *Tent* ___ *Pop-up Trailer* ___ *Pickup Camper* ___ *Travel Trailer*
___ *Motorhome* ___ *Not Camping*

(continued)

----------*FOLD HERE*----------

_____

_____

_____

Jefferson Lake Survey
South Park Ranger District
Box 219
Fairplay, CO 80440

7. *If you are camping, how many people are staying in your campsite?*
_____ *People.*
How many vehicles are parked at your campsite?
_____ *Vehicles.*

8. *If you are just visiting for the day, how many people came in your vehicle?*
_____ *People.*

9. *What do you like most about the Jefferson Lake area?*

(1) _____.
(2) _____.
(3) _____.

10. *What do you like least about the Jefferson Lake area?*

(1) _____.
(2) _____.
(3) _____.

11. *For the services provided, how do you feel about the $6.00 fee charged for camping?*

_____ *About right* _____ *Too high* _____*Too low*

12. *Please mark with an X any of the following proposals you would like to see in the Jefferson Lake Recreation Area.*

( ) *Pave all roads, including the main road to Jefferson Lake and all campground loops.*
( ) *Provide electrical and water hook-ups to each campsite in Jefferson Creek and Lodgepole campgrounds.*
( ) *Designate Aspen campground for tent camping only.*
( ) *Provide flush toilets and sinks with hot/cold water in each campground.*
( ) *Provide a dump station for RV's.*
( ) *Construct an outdoor theater and provide evening campfire talks and other interpretive programs such as guided hikes, wildflower identification, fishing lessons, etc.*
( ) *Improve and expand the hiking trail system within the area.*
( ) *Install an entrance station to provide increased security and limit the number of cars allowed into the area.*
( ) *Provide firewood for sale in all campgrounds.*
( ) *Construct a facility to provide hot showers.*
( ) *Expand the size of the campgrounds.*
( ) *Provide larger parking pads at campsites in Jefferson Creek and Lodgepole campgrounds.*
( ) *Place all 3 campgrounds on a reservation system.*

13. *If all of the above changes were made, how much would you be willing to pay for a camping fee?*

___ *$6.00* ___ *$8.00* ___ *$10.00* ___ *$12.00* ___ *$14.00*

14. *If all of the above changes were made and the entrance station was staffed at least 18 hours per day, how much would you be willing to pay as an entrance fee to the Jefferson Lake Recreation Area? This fee would apply to day users as well as campers.*

___ $1.00 ___ $2.00 ___ $3.00 ___$4.00

15. *If camping fees were reduced by 50% on Sunday through Thursday nights, would you be more likely to camp on those nights than on Friday or Saturday nights.*

___ Yes ___ No

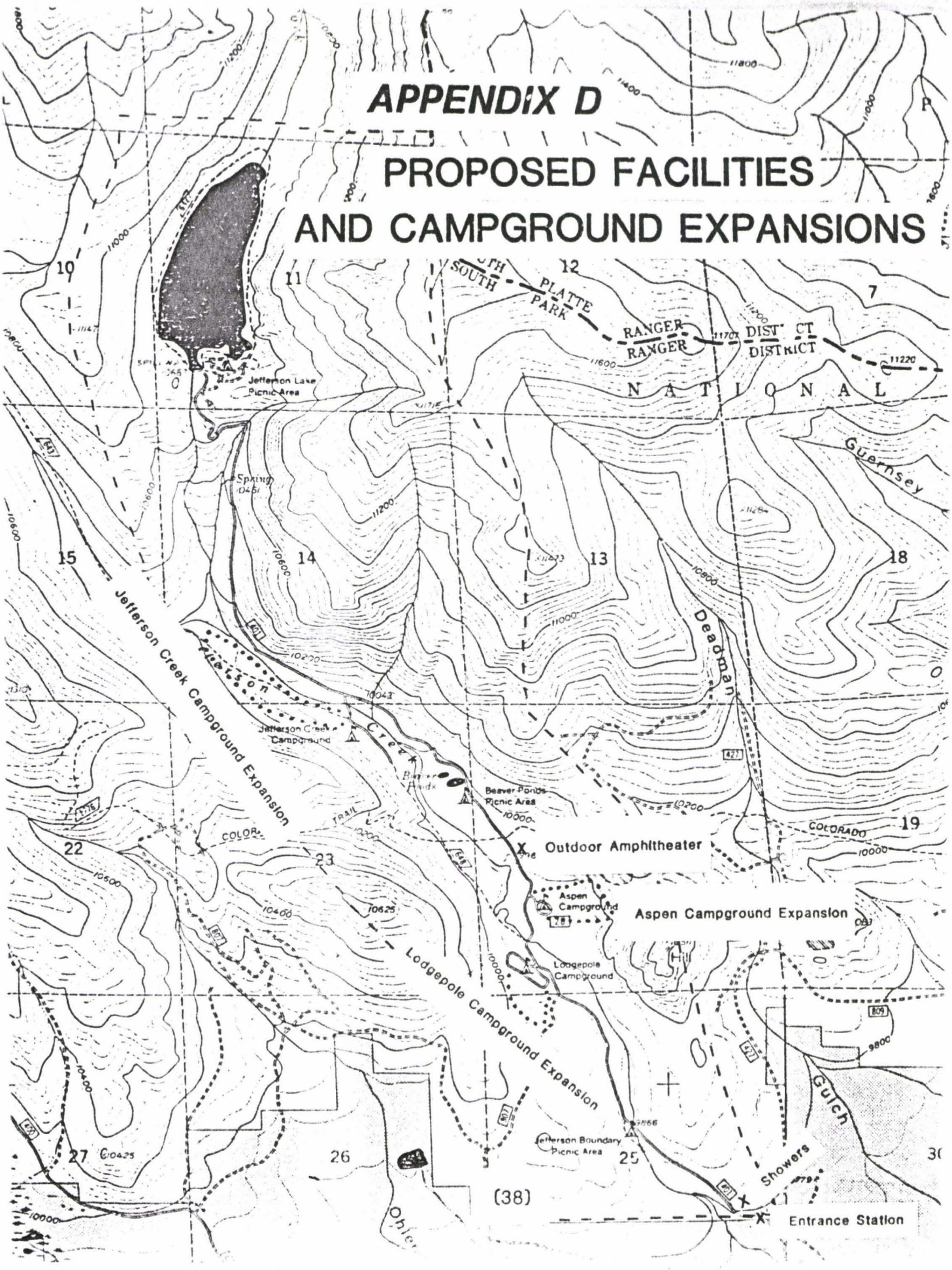
16. *If you have any other comments or suggestions, please write them below.*

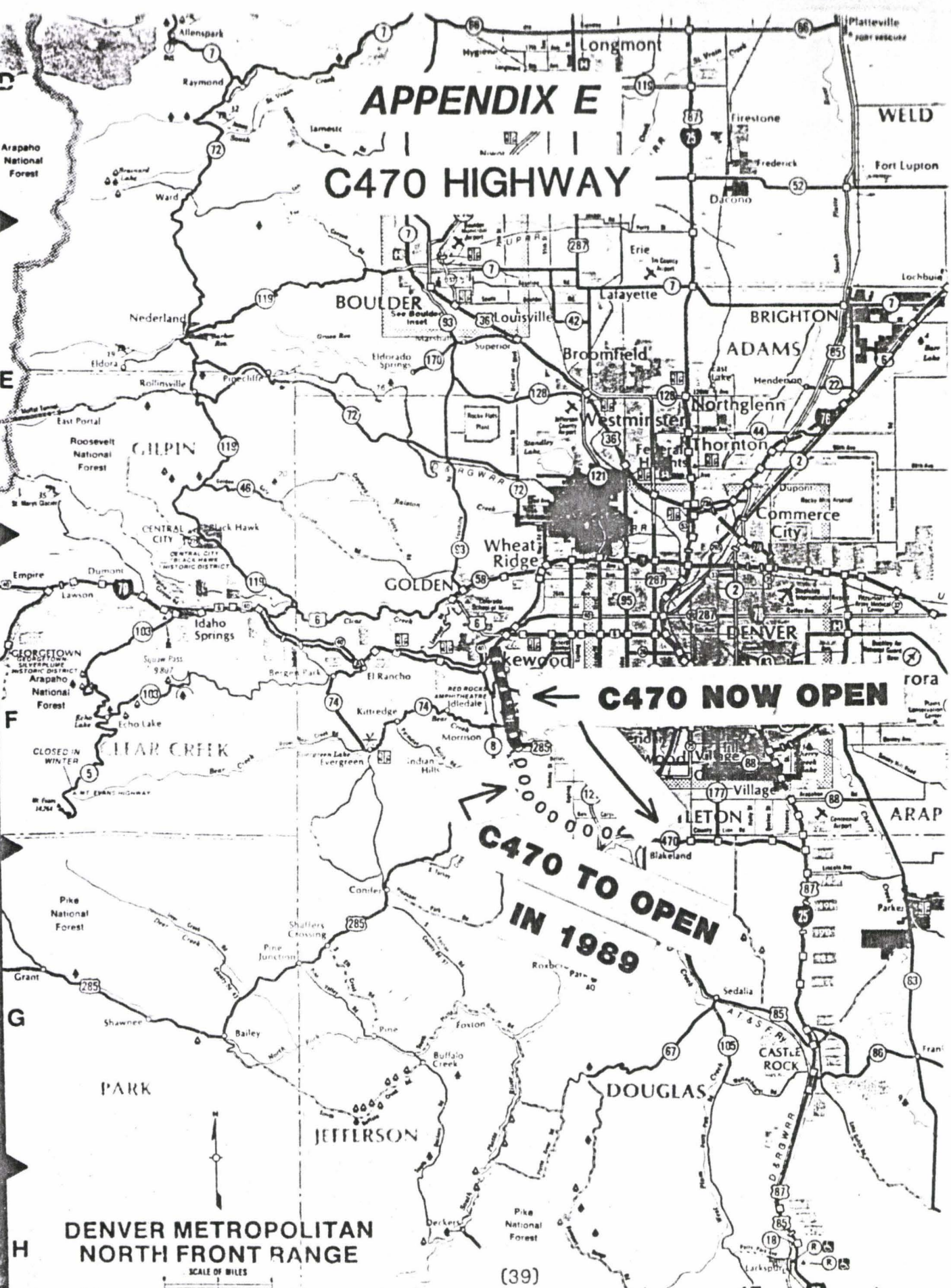
If you would like to be kept informed of any proposed changes in the management of the Jefferson Lake Recreation Area, please give your name and address in the return address portion of this survey.

This paper was prepared as a student project in partial fulfillment of the requirements of the Professional Development for Outdoor Recreation Management program at Clemson University. It in no way reflects USDA Forest Service policy nor are the opinions expressed those of anyone other than the author.

APPENDIX D

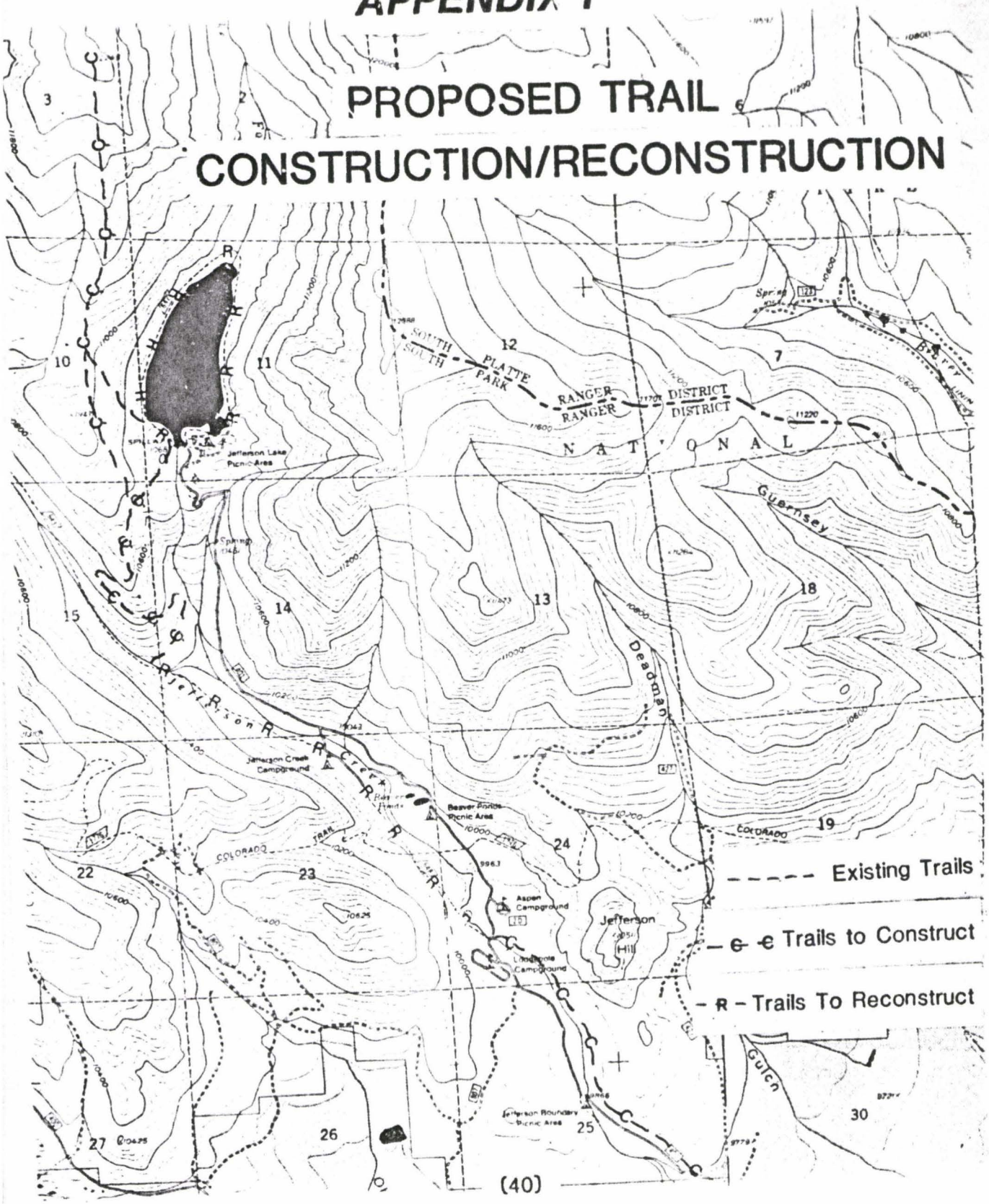
PROPOSED FACILITIES AND CAMPGROUND EXPANSIONS




APPENDIX E
C470 HIGHWAY
C470 NOW OPEN
C470 TO OPEN IN 1989
DENVER METROPOLITAN
NORTH FRONT RANGE
SCALE OF MILES
Longmont
Platteville
WELD
Firestone
Fort Lupton
Dacono
Erie
Lafayette
BOULDER
Louisville
Nederland
BRIGHTON
ADAMS
Broomfield
Westminster
Northglenn
Thornton
Commerce City
Wheat Ridge
GOLDEN
DENVER
Lakewood
Arapaho National Forest
Roosevelt National Forest
GILPIN
CLEAR CREEK
Idaho Springs
Georgetown
Evergreen
Conifer
Pike National Forest
PARK
JEFFERSON
DOUGLAS
Castle Rock
Parker
Sedalia
Littleton
Englewood
Aurora
Arapahoe National Forest

APPENDIX F

PROPOSED TRAIL CONSTRUCTION/RECONSTRUCTION



APPENDIX G

PROJECT DATA REPORT

Project ID: 1414141

Project Name: JEFFERSON LAKE

Project Type: JL

Location: SOUTH PARK RD

Project Life: 25

Preparer: JOHNNY HODGES

Date: 021589

Year Start Project: 1989

Discount Rate: 4 %

Base Year: 1988

PROJECT DATA REPORT

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 001
ALTERNATIVE DESCRIPTION: CURRENT MGT

Management Activities and Practices Data

Item #	Description	Project-Year Begin	Project-Year End	Cost ($)	Cost Year	Phase	Category
001	INITIAL GRAVEL	0	0	111200.00	1988	A	B
002	GRAVEL REPLACE 401	1	25	4719.00	1988	A	A
003	GRAVEL REPLACE CG	1	25	4300.00	1988	A	A
004	VEHICLE WEAR	1	25	18604.00	1988	A	A
005	ADMINISTRATION	0	25	22000.00	1988	A	A
006	MAINTENANCE	0	25	25000.00	1988	A	A

PROJECT DATA REPORT

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 001
ALTERNATIVE DESCRIPTION: CURRENT MGT

Resource Outputs

Item #	Description	Value Code	Project-Year Begin	Project-Year End	Output Level	Units	Phase	Output Code
001	MODIFIED CAMPERS	12A100	0	25	30270.0	RVD	A	2
002	MODIFIED DAY USE	12A200	0	25	36680.0	RVD	A	2

PROJECT DATA REPORT

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 001
ALTERNATIVE DESCRIPTION: CURRENT MGT

Resource Values - Economic Benefits and Financial Revenues

Value Code	Description	Unit of Measure	Benefit $ Value	Benefit Year	Revenue $ Value	Revenue Year
12A100	MODIFIED CAMPERS	RVD	9.00	1988	1.00	1988
12A200	MODIFIED DAY USERS	RVD	11.50	1988	.00	1988

PROJECT DATA REPORT

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 002
ALTERNATIVE DESCRIPTION: PROPOSED MGT

Management Activities and Practices Data

Item #	Description	Project-Year Begin	End	Cost ($)	Cost Year	Phase	Category
001	INITIAL PAVEMENT	0	0	997200.00	1988	A	B
002	FOG SEAL AT YR 1	1	1	129196.00	1988	A	A
003	FOG SEAL AT YR 6	6	6	129196.00	1988	A	A
004	FOG SEAL AT YR 11	11	11	129196.00	1988	A	A
005	FOG SEAL AT YR 16	16	16	129196.00	1988	A	A
006	FOG SEAL AT YR 21	21	21	129196.00	1988	A	A
007	CHIP SEAL AT YR 9	9	9	258390.00	1988	A	A
008	PAVE REPLACE YR 19	19	19	997200.00	1988	A	B
009	ADMINISTRATION	0	25	75000.00	1988	A	A
010	MAINTENANCE	0	25	75000.00	1988	A	A
011	NEW FACILITIES CONST	0	1	1059000.00	1988	A	C

PROJECT DATA REPORT

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 002
ALTERNATIVE DESCRIPTION: PROPOSED MGT

Resource Outputs

Item #	Description	Value Code	Project-Year Begin	Project-Year End	Output Level	Units	Phase	Output Code
001	PROJ MOD CAMPERS	12A300	0	25	29700.0	RVD	A	2
002	PROJ MOD DAY USERS	12A400	0	25	40950.0	RVD	A	2
003	PROJ MOD CAMP WEEKDY	12A500	0	25	30600.0	RVD	A	2
004	PROJ MOD CAMP OFFSEA	12A600	0	25	14400.0	RVD	A	2
005	PROJ MOD DAY USE OFF	12A700	0	25	12600.0	RVD	A	2

PROJECT DATA REPORT

PROJECT ID: 114141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 002
ALTERNATIVE DESCRIPTION: PROPOSED MGT

Resource Values - Economic Benefits and Financial Revenues

Value Code	Description	Unit of Measure	Benefit $ Value	Benefit Year	Revenue $ Value	Revenue Year
12A300	PROJ MOD CAMPERS	RVD	9.00	1988	2.00	1988
12A400	PROJ MOD DAY USERS	RVD	11.50	1988	.57	1988
12A500	PROJ MOD CAMP WEEKDY	RVD	9.00	1988	.83	1988
12A600	PROJ MOD CAMP OFFSEA	RVD	9.00	1988	.00	1988
12A700	PROJ MOD DAYUSE OFF	RVD	11.50	1988	.00	1988

PRESENT VALUE DATA

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 001
ALTERNATIVE DESCRIPTION: CURRENT MGT

Present Value Costs 4 %

Item #	Description	Project-Year Begin	Project-Year End	Base-Year Cost ($)	Phase	Category	PVC ($)
001	INITIAL GRAVEL	0	0	111200.00	A	B	111200.00
002	GRAVEL REPLACE 401	1	25	4719.00	A	A	73720.69
003	GRAVEL REPLACE CG	1	25	4300.00	A	A	67175.13
004	VEHICLE WEAR	1	25	18604.00	A	A	290634.00
005	ADMINISTRATION	0	25	22000.00	A	A	343686.00
006	MAINTENANCE	0	25	25000.00	A	A	390553.00

PRESENT VALUE DATA

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 001
ALTERNATIVE DESCRIPTION: CURRENT MGT

Present Value Benefits 4 %

Item #	Description	Project-Year Begin	End	Output Level	Units	Phase	Economic Value ($)	PVB ($)
001	MODIFIED CAMPERS	0	25	30270.0	RVD	A	12071901	4528360
002	MODIFIED DAY USE	0	25	36680.0	RVD	A	18691664	7011540

PRESENT VALUE DATA

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 001
ALTERNATIVE DESCRIPTION: CURRENT MGT

Present Value Revenues: 4 %

Item #	Description	Project-Year Begin	Project-Year End	Output Level	Units	Phase	Financial Value ($)	PVR ($)
001	MODIFIED CAMPERS	0		2530270.0	RVD	A	1986883	4528360
002	MODIFIED DAY USE	0		2536680.0	RVD	A	1124506	7011540

PRESENT VALUE DATA

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 001
ALTERNATIVE DESCRIPTION: CURRENT MGT

Economic and Financial Measures - Summary 4 %

Present Value Benefits	11539900
Present Value Costs	1276970
Benefit/Cost Ratio	9.04
Present Net Value	10262900
Present Value Revenues	1167130
Present Value Costs	1276970
Revenue/Cost Ratio	.91
Present Net Value	-109837

PRESENT VALUE DATA

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 002
ALTERNATIVE DESCRIPTION: PROPOSED MGT

Present Value Costs 4 %

Item #	Description	Project-Year Begin	Project-Year End	Base-Year Cost ($)	Phase	Category	PVC ($)
001	INITIAL PAVEMENT	0	0	997200.00	A	B	997200.00
002	FOG SEAL AT YR 1	1	1	129196.00	A	A	124227.00
003	FOG SEAL AT YR 6	6	6	129196.00	A	A	102105.00
004	FOG SEAL AT YR 11	11	11	129196.00	A	A	83923.13
005	FOG SEAL AT YR 16	16	16	129196.00	A	A	68978.69
006	FOG SEAL AT YR 21	21	21	129196.00	A	A	56695.40
007	CHIP SEAL AT YR 9	9	9	258390.00	A	A	181541.00
008	PAVE REPLACE YR 19	19	19	997200.00	A	B	473312.00
009	ADMINISTRATION	0	25	75000.00	A	A	1171660.00
010	MAINTENANCE	0	25	75000.00	A	A	1171660.00
011	NEW FACILITIES CONST	0	1	1059000.00	A	C	1018470.00

PRESENT VALUE DATA

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 002
ALTERNATIVE DESCRIPTION: PROPOSED MGT

Present Value Benefits 4 %

Item #	Description	Project-Year Begin	End	Output Level	Units	Phase	Economic Value ($)	PVB ($)
001	PROJ MOD CAMPERS	0	25	29700.0	RVD	A	11844585	4443090
002	PROJ MOD DAY USERS	0	25	40950.0	RVD	A	20867584	7827760
003	PROJ MOD CAMP WEEKDY	0	25	30600.0	RVD	A	12203514	4577730
004	PROJ MOD CAMP OFFSEA	0	25	14400.0	RVD	A	5742841	2154230
005	PROJ MOD DAY USE OFF	0	25	12600.0	RVD	A	6420792	2408540

PRESENT VALUE DATA

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 002
ALTERNATIVE DESCRIPTION: PROPOSED MGT

Present Value Revenues: 4 %

Item #	Description	Project-Year Begin	Project-Year End	Output Level	Units	Phase	Financial Value ($)	PVR ($)
001	PROJ MOD CAMPERS	0		2529700.0	RVD	A	3186350	4443090
002	PROJ MOD DAY USERS	0		2540950.0	RVD	A	2227494	7827760
003	PROJ MOD CAMP WEEKDY	0		2530600.0	RVD	A	1791900	4577730
004	PROJ MOD CAMP OFFSEA	0		2514400.0	RVD	A	345493	2154230
005	PROJ MOD DAY USE OFF	0		2512600.0	RVD	A	386281	2408540

PRESENT VALUE DATA

PROJECT ID: 1414141
PROJECT NAME: JEFFERSON LAKE
ALTERNATIVE NUMBER: 002
ALTERNATIVE DESCRIPTION: PROPOSED MGT

Economic and Financial Measures - Summary 4 %

Present Value Benefits	21411296
Present Value Costs	5449570
Benefit/Cost Ratio	3.93
Present Net Value	15961800
Present Value Revenues	2977490
Present Value Costs	5449570
Revenue/Cost Ratio	.55
Present Net Value	-2472080

ECONOMIC & FINANCIAL ANALYSIS

SUMMARY REPORT

PROJECT NAME: JEFFERSON LAKE
PROJECT ID: 1414141
LOCATION: SOUTH PARK RD

DATE: 02/16/89
BASE YEAR: 1988
DISCOUNT RATE: 4 %

I. ECONOMIC BENEFIT/COST ANALYSIS

	ALTERNATIVES	
	001	002
PRESENT VALUE BENEFITS ($)		
Range	0	0
Recreation	1.15399E+07	2.14113E+07
Timber	0	0
Water	0	0
Wilderness	0	0
Wildlife & Fish	0	0
Other	0	0
Total Economic Benefit	1.15399E+07	2.14113E+07
PRESENT VALUE COSTS ($)		
Operation & Maintenance	1.16577E+06	2.96079E+06
Capital Investment- Roads	111200	1.47051E+06
- Other	0	1.01827E+06
General Administration	0	0
Cooperative/Non-Budget	0	0
Total Economic Cost	1.27697E+06	5.44957E+06
ECONOMIC MEASURES ($)		
Total		
Benefit/Cost Ratio	9.04	3.93
Present Net Value	1.02629E+07	1.59618E+07
Incremental		
Benefit/Cost Ratio		2.37
Present Net Value		5.69884E+06
Rank by B/C Ratio		1

ECONOMIC & FINANCIAL ANALYSIS

SUMMARY REPORT

PROJECT NAME: JEFFERSON LAKE
PROJECT ID: 1414141
LOCATION: SOUTH PARK RD

DATE: 02/16/89
BASE YEAR: 1988
DISCOUNT RATE: 4 %

II. FINANCIAL REVENUE/COST ANALYSIS

	ALTERNATIVES	
	001	002
PRESENT VALUE REVENUES ($)		
Range	0	0
Recreation	1.16713E+06	2.97749E+06
Timber	0	0
Other	0	0
Total Financial Revenue	1.16713E+06	2.97749E+06
PRESENT VALUE COSTS ($)		
Operation & Maintenance	1.16577E+06	2.96079E+06
Capital Investment- Roads	111200	1.47051E+06
- Other	0	1.01827E+06
General Administration	0	0
Total Budget Cost	1.27697E+06	5.44957E+06
FINANCIAL MEASURES ($)		
Total		
Revenue/Cost Ratio	.91	.55
Present Net Value	-109838	-2.47208E+06
Incremental		
Revenue/Cost Ratio		.43
Present Net Value		2.36225E+06
Rank by R/C Ratio		1